SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

JANUARY, 1960

Ferocactus wislizenii in fruit. This Arizona, New Mexico and Mexican barrel blooms late in the summer and bears golden-yellow fruit in February and March which are relished by browsing animals, birds and rodents.

REG MANNING

SAGUAROLAND BULLETIN

Published and owned by the Arizona Cactus and Native Flora Society, sponsors of the Desert Botanical Garden of Arizona, P.O. Box 547, Tempe. Saguaroland Bulletin attempts to promote the Garden and to provide information on the desert plants and their culture. Subscription $5.00 per year, the subscription including active membership in the Society and the Desert Botanical Garden. Issued 10 times a year.

W. HUBERT EARLE, Editor

Volume 14 JANUARY, 1960 No. 1

Arizona Cactus and Native Flora Society

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Desert Botanical Garden of Arizona

STAFF

Director ..... W. Hubert Earle
Consulting Botanist ..... James A. McCleary, Ph. D.
Horticulturist ..... John H. Weber
Assistant Horticulturist ..... V. Edgar Jones
Student Horticulturist ..... Demetrios Vlachos
Student Horticulturist ..... Miqdad Hasan Annab

Garden open daily, including holidays, 9 A. M. to 5 P. M. from September 1st to July 1st

NOTES FROM THE EDITOR'S DESK

THANK YOU: The Executive Board, the Garden Staff and your Editor join to extend to you members our most sincere thanks for your faithful support the past year, your notes of appreciation, your constructive ideas and comments. The holiday season also brought us many fine letters and cards from all over the world. We will continue to serve you in 1960 as you are serving the Garden with your support.

BULLETIN: The format of the Saguaroland Bulletin will continue in about the same manner as last year. Articles relative to desert plants are always acceptable. Our horticulturist, John Weber, will describe, each month, a desert shrub for use in low-desert home plantings. A 'Cactus of the Month' will be featured monthly with a 'tipped-in' colored card and a short description of the plant.

CLASSES: The fall course of 6 lessons on "Know your desert plants' had an enrollment of 54 persons. A photo of those on the field trip is shown on page 12.

The winter course will begin Jan. 6th. If you miss the first lesson attend the second lesson as a short review of the first lesson will be given. We urge all our members and their friends to avail themselves of this opportunity to learn about the desert plants.

WINTER CONSTRUCTION: This is the first year that we have ever attempted to do make Garden improvements during the winter months and it is working out quite satisfactory.

With the help of our two part time workers, botany majors at Arizona State University shown on photo on page 10, beds have been enlarged in the Patio for the planting of tender desert shrubs and trees; new beds were constructed east of the Patio; a new bridge and paths are being built in the Arizona Flora section; large Cerei, Opuntias and trees have been transplanted to the McDowell Rd. entrance and along the McDowell Rd. property line.

ACCESSIONS:

The Garden is quite grateful to the following persons, collectors and Institutions for the many plants that they have contributed to the Garden the past year. Many of the plants are new to the Garden and others are 'type locality' plants that are needed for study and comparison.

Mrs. Russell, Reserve, N. M. — Ten plants of that area.

Jack Zaninovich, Delano, Calif. — Opuntias & Agaves of Calif.

W. Blomquist, San Manuel, Ariz. — Mammillarias and cactus seeds of Ariz.

Arthur Combe, Ogden, Utah — Shrubs of the high deserts.

Mrs. J. A. Olsen, Tempe, Ariz. — Cycad revoluto.

Stanley Kohler, Tempe, Ariz. — Hedgehog crests of Ariz.

Dr. George Lindsay, Natural Museum of History, San Diego, Calif. — Eleven plants from vicinity of Los Angeles Bay, Baja Calif.

Boyce — Thompson Southwestern Arboretum, Superior, Ariz. — twenty desert shrubs.

R. McGill, Glendale, Ariz. — Opuntias and gourds of Ariz.

Warner Dodd, Phoenix — Ariz. Agaves.

Chas. Mieg, Scottsdale — twenty plants from Colima, Mexico, seeds of 30 shrubs & trees from two collecting trips in western Mexico.

Don Bauer, Phoenix — Five cactus from northern New Mexico.

W. G. Cook, Phoenix — Opuntias from Badlands, S. D.

Arthur Blocher, Amboy, Ill. — four Ceropegias.

E. Beahm, Pasadena — Forty-six Epiphyllums.

Mrs. A. O. Olsen, Phoenix — trailer load Agaves, Aloes, shrubs.

Fred Parrott, Parker, Ariz. — Six trailer loads of Agaves and cactus.

Santa Barbara Botanical Garden, Santa Barbara, Calif. — four Furcreas.

Garden Staff — Thirty-five type-locality plants on fourteen collecting trips.

DODONAEA VISCOSA SAPINDACEAE (Soapberry Family)

HOP-BUSH

JOHN H. WEBER, Horticulturist

Dodonaea viscosa bush 7' high, 4½ years old

DESCRIPTION:

A non-deciduous shrub up to 12 feet in height, branches spreading to form a loose open plant. The leaves are long and narrow, entire, resinous and sticky to the touch. The flowers are yellow to yellowish green, small and insignificant. The winged fruit is dry, three-quarters of an inch to one inch in diameter, yellowish-green.

DISTRIBUTION:

This plant has a world-wide distribution in the warmer regions of both hemispheres; being found in Mexico, the West Indies, South America, and Australia. In the United States it is local in Florida and from southern Yavapai county to Cochise and Pima counties in Arizona. It is limited to dry rocky slopes, dry washes, and canyons; ranging in elevation from 2,000 to 4,500 feet. It usually grows on Calcareous or Ryolitic soils in association with **Hymenoclea** (Burrobush), **Simmondsia** (Jojoba), **Celtis** (Hackberry), and **Fouquieria** (Ocotillo).

UTILIZATION:

Functionally **Dodonaea** can be used as a foundation plant, particularly where an "accent" shrub is needed at a corner or a large blank wall situation. It can be used effectively as a screen for service areas; such as. garbage, tool storage and animal runs. In desert gardens it will provide partial shade for those succulents which require some protection from the intense heat and light of the desert sun.

Dodonaea perhaps attains its greatest aesthetic value when used singly as a specimen plant. Its open ascending habit, narrow leaves and light green color, gives a desirable contrast in texture and form to other ornamentals used in landscaping. A form which assumes a red leaf color extends the field of application especially where a variation in the garden color scheme is desired.

CULTURE:

The Hop-Bush takes full sun or partial shade and needs space so as to attain normal growth habit. It is not de-

manding as to soil condition, but thrives best on a well-balanced rocky substrate. The plant is capable of withstanding extended drought, but responds to regular and frequent watering during dry seasons. It requires no fertilization; however, in instances where it is planted in acid soils, liberal applications of lime might prove beneficial.

Dodonaea viscosa stem with fruit, X 2/3.

PROPAGATION:

Dodonaea germinates readily from fresh seed in four to five days when daytime temperatures are in the eighty to ninety degree range. It will also grow from second year wood-cuttings without too much difficulty. Our seedlings are started in three inch plastic pots using decomposed granite soil as a base. After the seedlings have grown to three or four inches and have dropped the Cotyledon leaves, they are then transferred to one gallon containers. If seeded in mid-summer our plants make ten inches of growth by the first of December. Ground-squirrels, pack-rats and rabbits apparently avoid the plant, but protection might be in order where local conditions require it.

Dodonaea viscosa seedling, 9" tall, 3 months of age.

AVAILABILITY:

In California and Arizona the red leaf variety, **Dodonaea viscosa var. purpurea**, is available in local nurseries or can be ordered by your nurseryman from wholesale growers. The winged-fruits remain attached to the plant for a long period, and seed can be collected in those regions where the plant is native or has become established in a wild state.

REMARKS:

Livestock apparently utilize this plant as forage only under conditions of extreme stress. Saponins contained in the Hop-Bush have led to its use as a fish poison in the West Indies. It is reported that the bark and leaves have been used medicinally in the treatment of fever, gout, colic, rheumatism, and venereal disease. It is to be remembered,

however, that the plant contains fractions that are poisonous and care should be exercised. Many other poisonous plants, such as Oleander, Sophora, and Castor Bean have been used successfully as ornamentals and **Dodonaea** need not be rejected where there are small children. The four winged fruits make attractive dried arrangements and the common name, Hop-Bush, is derived from the appearance of the fruit which has been used as a substitute for hops in the making of beer.

REFERENCES:
BAILEY, L. H. — The Standard Cyclopedia of Horticulture.
BENSON, DARROW — Trees & Shrubs of The Southwestern Deserts.
DAYTON, N. A. — Important Western Browse Plants.
KEARNEY & PEEBLES — Arizona Flora.
STANDLEY, P. C. — Trees & Shrubs of Mexico.

THE SAN DIEGO BARREL CACTUS

Growing along the costal slopes in the San Diego region are still to be found a few plants of **Ferocactus viridescens** commonly called the "San Diego Barrel Cactus". This cactus used to be quite common in this area, but due to the increase in the population much of its former range has been turned into subdivisions.

Ferocactus viridescens 8" in height.

It is a very beautiful sight in the spring to see the hillsides and mesas covered with grass and here and there a barrel cactus standing out above the greenness with its covering of bright red and yellow spines, crowned with a ring of showy yellow flowers. Quite often they form mounds of several heads derived from either a damaged plant or from young seedlings growing up to surround their parent.

The plant is well armed with a covering of stout spines. Four central spines appear in the center of the large areole. The lower one is much broader than the other three. At first it points straight up or is an ascending spine, but with age and increased diameter of the plant it curves out and downward and finally becomes completely decurved. The young central spines are at first a bright red with light yellow tips, but with age the red becomes duller and in some plants they become a dirty pale yellow.

The San Diego Barrel at maturity may reach a foot in height and diameter. Because of tis medium size and ability to withstand more water than most species of barrel cactus, it is a very desirable species for use in a cactus garden. It thrives in full sun and a well drained soil. Specimens planted in decomposed granite last fall at the Santa Barbara Botanic Garden are making excellent growth this spring with a profusion of flower buds just beginning to appear. They should truly be a beautiful sight in another month or two.

E. R. BLAKELY
Grounds Superintendent
Santa Barbara Botanic Garden

Lace Cactus

Echinocereus reichenbachii (Lace Cactus) is a favorite of many amateur growers because of its ease of growth, hardiness and light purple blossoms, 3" to 4¼" in diameter. The plant is found in Texas and extends south to Saltillo, Mexico.

The thin, pectinate, appressed spines form a delicate lacy pattern, hence the name: Lace Cactus.

ESCABA DE LA VIBORA
YERBA DE LA VIBORA
COLLALLE
YELLOW WEED
BROWN WEED
DROPSEED GRASS
SHEEP WEED
SNAKE WEED
RATTLESNAKE WEED
RATTLESNAKE ROOT
RATTLESNAKE MASTER
ASTER FAMILY
ASTER FAMILY

GUTIERREZIA TENUIS

COMPOSITAE

A multitude of wild plants have, at various times and in all parts of the United States, had a place in popular favor as remedies more or less efficacious for the bites of poisonous serpents, and have therefore been the recipients of several of the English names given above. The **escoba de la vibora,** meaning broom of the viper, has also been similarly designated by the English-speaking population of the Southwest, although the application of such pseudonyms to this plant appears to be based upon a translation of its Spanish name, rather than upon any general use of it as a remedy against snake-bite. When I inquired about the reason for calling it **escoba de la vibora,** I was told that if the entire plant is gathered and held in one's hand, it resembles a broom, but no explanation was forthcoming to throw light upon its association with a snake.

However, in old California ,strong **escoba** tea was administered after a tourniquet had been tied above the bite and an incision had been made deep enough so that the blood flowed freely when someone had been struck by a rattlesnake.

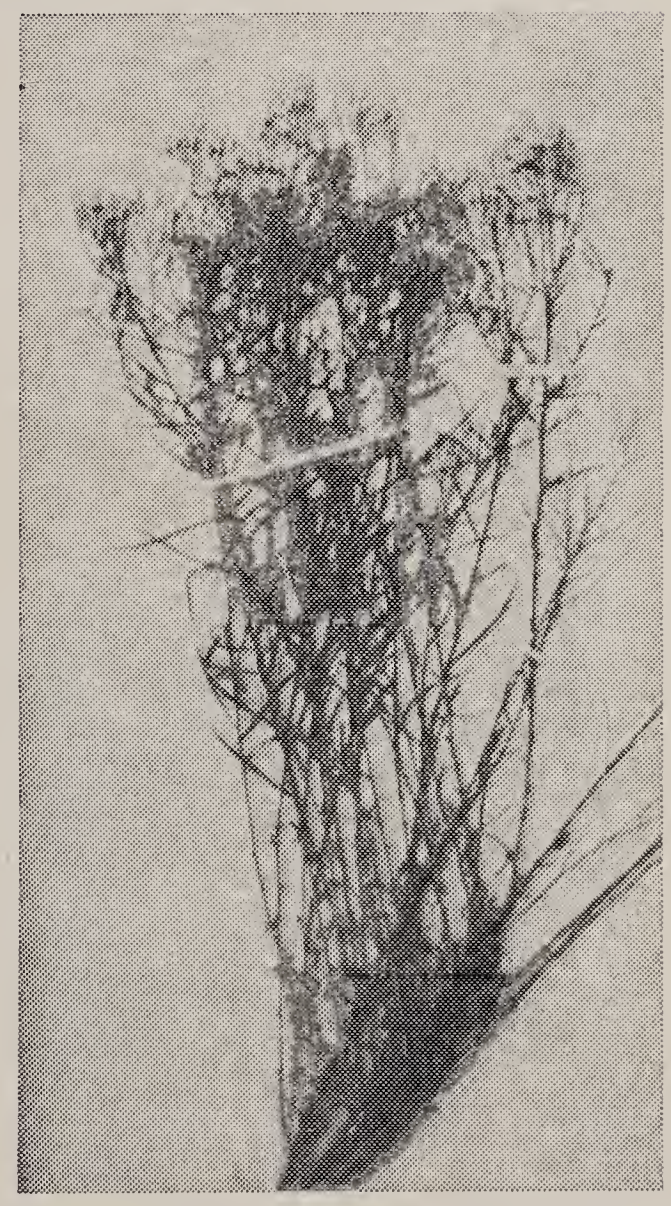
Another method which is used by the

Gutierrezia lucida branch, X 1/4.

Gutierrezia lucida blossoms, X 1/8.

people around Santa Fe to counteract rattlesnake poison is to slit a live chicken between the breast-bone and wishbone, and place this slit over an incision made in the wound. When the comb of the chicken turns blue, it is a sign that the chicken is absorbing the poison. At the death of the fowl, another one is used in the same manner and the treatment is continued until the last bird survives. It takes about three chickens to effect a cure, and the white meat is the chief factor. This practice has evolved from the old Indian one of applying any bird in the same manner.

The Spanish-Americans of New Mexico have found that **escoba de la vibora** made an excellent herb for many purposes. For counteracting rheumatism, they make a tea from it, and bathe in the decoction every day for nine days. Or they boil two handsfull of the plant, either green or dry, in a gallon of water, strain the liquid, and add half a pint of honey. This mixture is allowed to stand for twenty-four hours; then a glass of it is taken for nine mornings before breakfast.



Gutierrezia sarathae branch, X 1/3.

One **medica** in Arroyo Seco told me of a remedy that had cured a patient "who had suffered from piles for twenty years". She bathed the sores with a decoction of the plant, and applied a little Mexican oil, **aceite mexicano** ,to prevent itching. "He never had any more trouble", she proudly concluded. Still another method is to mix ground **collalle** with **anil del muerto** (Verbesina encelioides), mentholatum and cigarette ashes and apply. And to prevent the return forever of hemorrhoids, the burned, ground bones of a burro are added to the above preparation, and applied.

The greens, with or without flowers, are boiled as a decoction for stomach ache, and a bath is taken in the same liquid to aid in the recovery from malaria.

Ethnobotanical excerpt from 'Healing Herbs of the Upper Rio Grande' — L. S. M. Curtin, Laboratory of Anthropology, Santa Fe, N. M.

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* **Gutierrezia** is also known as matchweed, resinweed, broomweed, turpentineweed. Plants of dry stony plains, mesas and slopes. The snakeweeds are worthless plants that are not even of much value in retarding soil erosion. They are more or less poisonous to sheep and goats when eaten in quantity but are unpalatable and are seldom grazed. The grazing capacity of much southwestern grassland has been greatly reduced by encroachment of the snakeweeds.

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* 'Flowering Plants & Ferns of Arizona' — Kearney & Peebles.

The Garden's construction program continues thru the winter. Student horticulturists Miqdad Annab, Jordan, and Demetrios Vlachos, Greece, learn horticulture by building new beds then planting them with plants. All of the beds in the Patio have been enlarged, terraced and filled with granite soil.

Habitat photo by R. C. Proctor of Echinocereus engelmannii (Strawberry Hedgehog) blooming in late April. Opuntia fulgida (Chain-fruit cholla) is visible along edge and upper right-hand corner of photo.

The all-day field trip of the fall class in "Know your desert plants" was undertaken by a few of the hardier members. Unusual rains and cool weather made hiking slightly messy underfoot but a full day was enjoyed by the above members. Seated, L. to R.: Mrs. Chas. Garland, Phoenix; Mrs. Austin Fort, Scottsdale; George Lamb, Lake Geneva, Wisc.; Walter Scott, Phoenix; Mrs. E. Ogsdury, Phoenix; Mrs. C. A. Miller, Glendale; Dr. Margaret Kerr and 'Primrose', Phoenix; Standing: Mrs. A. E. Hatch, Mesa; Austin Fort, Scottsdale; A. E. Hatch, Mesa; Mrs. and Dr. Austin Oates, Mesa; your Editor and Mrs. L. P. Earle, Tempe.

CALENDAR OF EVENTS FOR JANUARY

Jan.	5	CACTOMANIACS	8 P.M.
	6	CLASS — Deserts and their Plants	3 P.M.
	7	LECTURE — Birds & Reptiles of Arizona	3 P.M.
	13	CLASS — Desert plants and their culture	3 P.M.
	14	LECTURE — Succulents other than cacti	3 P.M.
	20	CLASS — Succulents plants of the desert	3 P.M.
	21	LECTURE — Collecting plants in Mexico	3 P.M.
	27	CLASS — Xerophytes and Mesaphytes	3 P.M.
	28	LECTURE — Arizona Cacti in bloom	3 P.M.

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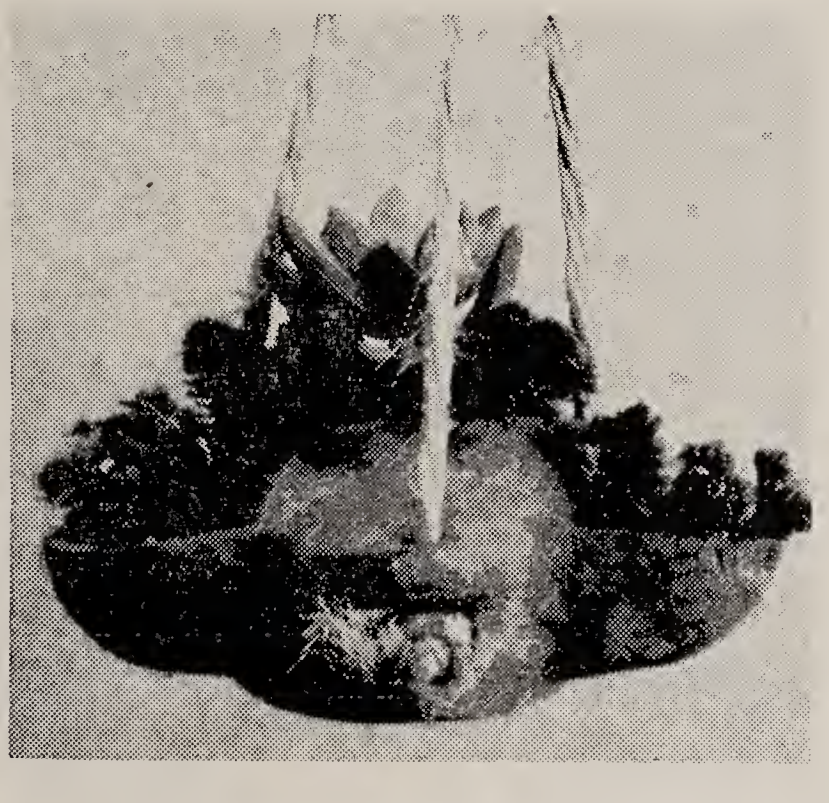
DESERT BOTANICAL GARDEN of ARIZONA

FEBRUARY, 1960



An unusual Mexican hanging Strawberry jar of Succulents exhibited in 1959 by John B. Hales

REG MANNING

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W. HUBERT EARLE, Editor

Volume 14 FEBRUARY, 1960 No. 2

Arizona Cactus and Native Flora Society

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Desert Botanical Garden of Arizona

STAFF

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Garden open daily, including holidays, 9 A. M. to 5 P. M. from September 1st to July 1st

13TH ANNUAL CACTUS SHOW

Co-sponsored by the Phoenix-Gazette newspaper and the Desert Botanical Garden will be held daily Feb. 21st thru Feb. 28th, 9 A.M. to 5 P.M. in the Webster Auditorium at the Garden.

A list of the various entry classification is found on page 18 of this issue. Several changes have been made as follows: — All dried or desert material in centerpieces and arrangements must be Natural i.e. covering of the dried material with paints, etc., is not acceptable. American Indian Influence has been added to arrangements and centerpieces. Miniature arrangements have been divided into two sizes. A classification of use of Desert Woods has also been added.

As in the past, no entry fee is charged for exhibitors. An invitation is extended to all persons interested in desert plants, photographs and paintings to enter their exhibits between 9 A.M. Saturday and up to 9:30 A.M. Sunday. Judging will begin at 10:00 A.M. Sunday, Feb. 21st.

Three sweepstakes trophies will be awarded to those having the greatest number of points in each of the three sections. Ten small trophies will be awarded for the best exhibits in the various sub-sections. Ribbon awards will be given for 1st, 2nd, 3rd and 4th places.

The show will again feature several new Educational exhibits which always appeal to our many visitors. Exhibitors wishing to place educational exhibits are asked to contact the Garden for reservation of space desired. Several schools have already indicated a desire to place such displays.

Our Shows in the past have been successful due to the fine help of many of our members and friends who volunteered to issue Camera Permits, Nature Walk pamphlets; aided behind the sales counter of books, cards, kodachrome slides, etc.; sold plants; acted as hosts and hostesses; guided the flow of traffic thru the Garden's paths; parked cars and answered many questions with a smile.

If you can give a few hours or days to help in any of the above categories, please contact or phone the Garden, BR 5-5592, and let us know which days you can help us. Those persons helping each day are invited to have lunch at the Archer House prepared by your editor's wife, Lois Porter Earle, a wonderful hostess.

Many inquiries have already been made about the Show and the classifications and we are all looking forward to another excellent Show. Bring your friends and guests but as a note of warning; Sundays are always crowded so it may be wise to visit the Show during the week-days to get a better view of the fine exhibits and the latest improvements in the Garden.

PLANT OF THE MONTH

Terra Cotta Cactus

Opuntia spinosior (Cane Cholla, Spiny Cholla) is a large bush type cholla found growing amongst Junipers and desert grass lands in Arizona, New Mexico and northern Mexico. The plant has blossoms that vary from a light cream to brown thru to dark pinks, followed with bright yellow fruits that remain for one to two years. The wood of the dried branches is used for canes, hence the name: Cane Cholla.

Thirteenth Annual

CACTUS SHOW

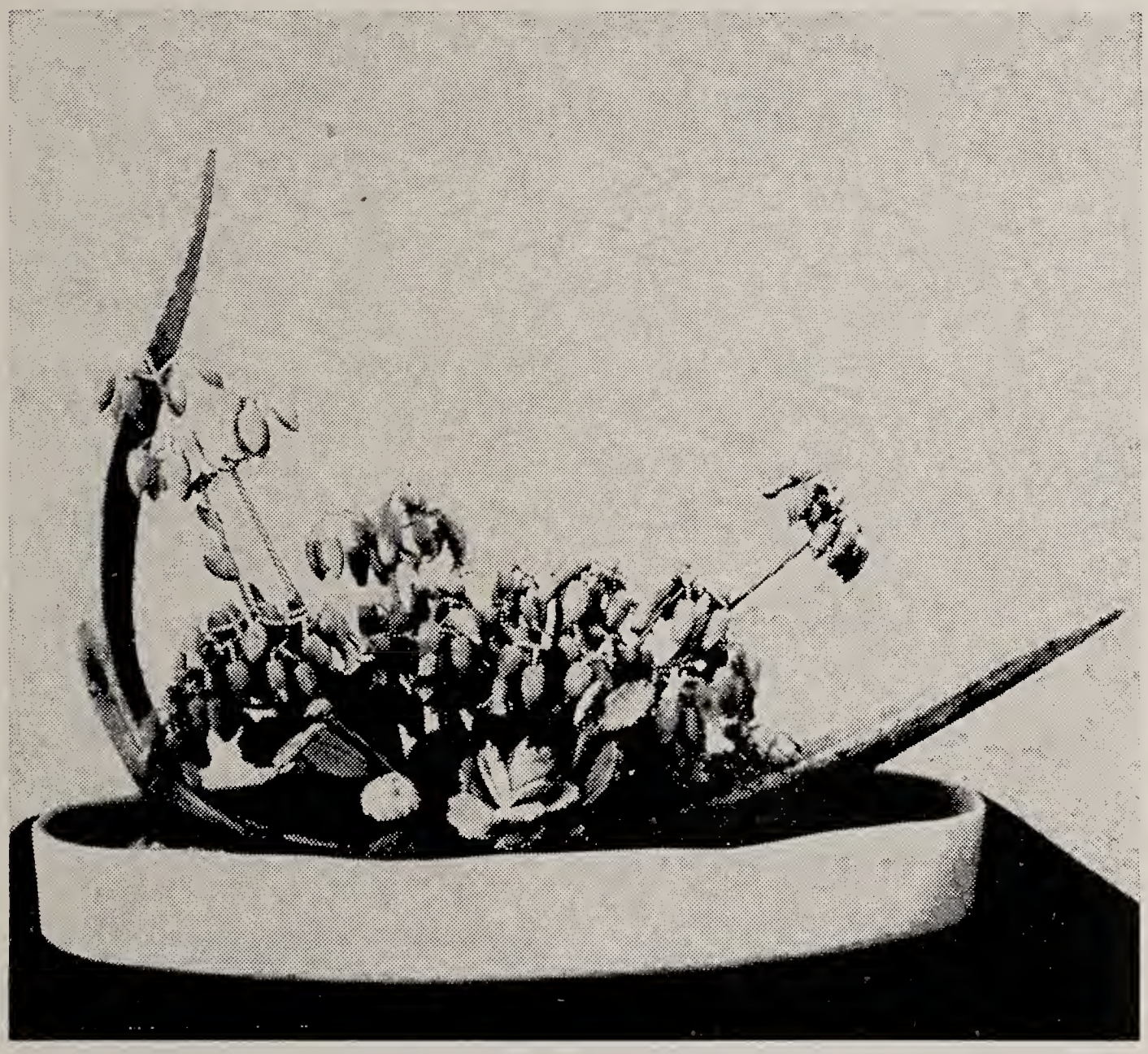
FEBRUARY 21ST TO FEBRUARY 28TH, 1960

Sponsored by the Phoenix Gazette and the Desert Botanical Garden

Papago Park,

Phoenix, Ariz.

SHOW OPEN DAILY 9 A.M. TO 5 P.M. — ADMISSION FREE



Center piece arrangement of Succulents by Mrs. R. I. Turner, 1959 Show.

SECTION "1" **CACTI**

A. **POTTED SPECIMEN PLANTS**

1. MAMMILLARIA
2. CORYPHANTHA
3. OPUNTIA
4. THELOCACTUS
5. ECHINOMASTUS
6. ECHINOFOSSULOCACTUS (Stenocactus)
7. LOBIVIA
8. ECHINOPSIS
9. ASTROPHYTUM
10. CEREUS
11. ARIOCARPUS
12. ECHINOCEREUS
13. GYMNOCALYCIUM
14. BARRELS - Ferocactus and Echinocatus
15. EPIPHYLLUM
16 ANY OTHER SPECIES

B. **CRESTED SPECIMENS**

1. Crested Cactus - Own Root
2. Crested Cactus - Grafted

SECTION "2" **SUCCULENTS:**

A. **POTTED SPECIMEN PLANTS**

1. EUPHORBIA
2. DUDLEYA
3. KALANCHOE
4. ALOE
5. SEDUM
6. ECHEVERIA
7. HAWORTHIA
8. AGAVE
9. YUCCA
10. STAPELIA
11. CRASSULA
12. LITHOPS
13. MESEMBRYANTHEMUM

14. PLEIOSPILOS
15. ANY OTHER SPECIES

SECTION "3" **ARRANGEMENTS** (Accessories Permitted)

A. **DISH GARDENS:** (Any Size Garden)
   1. Cacti
   2. Succulents
   3. Cacti & Succulents

B. **CENTERPIECES:** (Accessories Permitted)
   1. Cacti
   2. Succulents
   3. Cacti & Succulents
   4. Natural Dried Desert Material
   5. Mexican Indian Influence
   6. American Indian Influence

C. **ARRANGEMENTS on/or AGAINST THE WALL —** (Accessories Permitted)
   1. Cacti
   2. Succulents
   3. Cacti & Succluents
   4. Natural Dried Desert Material
   5. Mexican Indian Influence
   6. American Indian Influence
   7. Novelty Arrangements

D. **CORSAGES:**
   1. Succulents
   2. Dried Desert Materials

E. **BUTTON GARDENS**

F. **MINIATURE ARRANGEMENTS**
   1. 5" to 8"
   2. Under 5"

G. **STRAWBERRY JAR**

H. **EDUCATIONAL**

I. **BLACK & WHITE PHOTOS — Desert Subjects**

J. **OIL, WATER COLORS — Desert Subjects**

K. **USE OF DESERT WOODS**

CALENDAR OF EVENTS FOR FEBRUARY

A dish garden of etoliated cactus growing in an old pot chard. Entered in the 1959 Show by Mrs. E. S. Tanner.

The 13th Annual Cactus Show, as in the past, is open to all persons interested in exhibiting in the various classifications. No entry fee is charged.

Awards of small trophies will be made for the various subsections. 3 Sweepstakes trophies will be awarded for most points in each of the three sections. Ribbon awards for 1st, 2nd, 3rd and 4th in each classification.

Entries can be placed from 9 A.M. Saturday, Feb. 20th to 9:30 A.M., Sunday, February 21st.

Judging will be from 10 to 12 A.M. Sunday, Feb. 21.

Entries may be moved from the Show only after 5 P.M. Sunday, February 28th, or Monday, February 29th.

For any additional information phone the Desert Botanical Garden, BR 5-5592.

CONDALIA LYCIOIDES RHAMNACEA (Buck-Thorn Family)

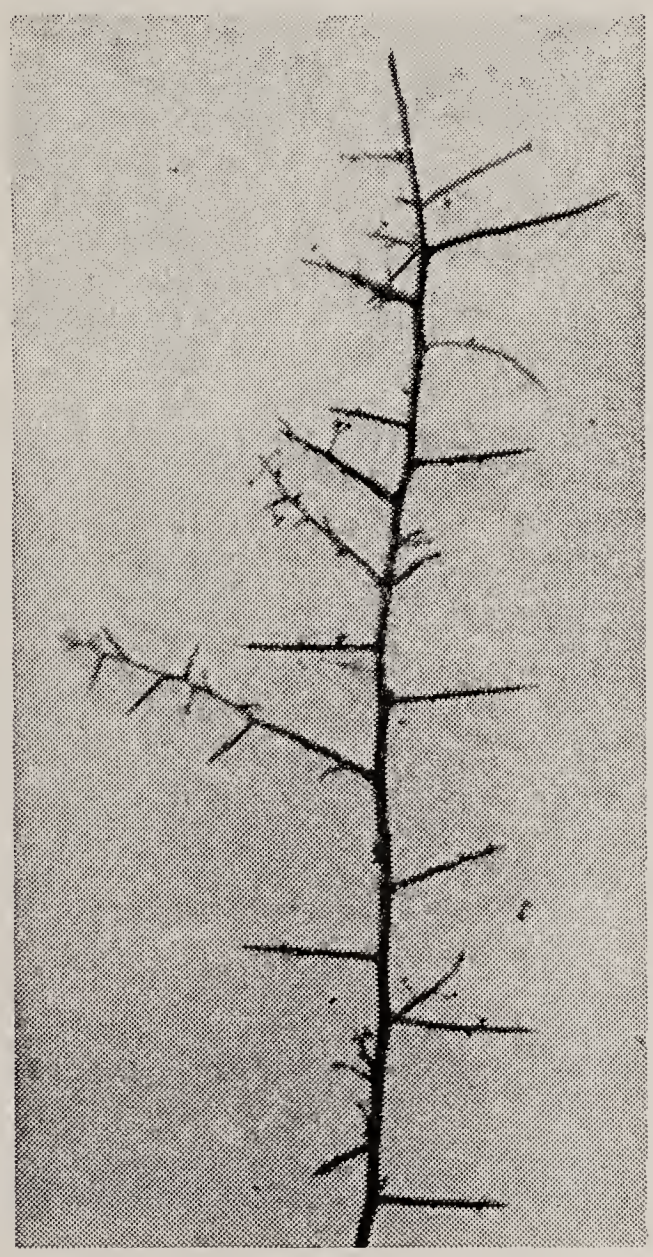
GRAY-THORN

JOHN H. WEBER, Horticulturist

DESCRIPTION:

A much branched small tree growing to ten feet in height and eight feet in breadth. The spiny branches are rigid with many short twigs at right angles, each of these having a terminal spine. The elliptical leaves are simple and attain a length of three-quarters of an inch. The leaves are arranged in alternate positions along the stems. The small flowers are greenish-white and are found throughout the summer months. The globose fruit is a drupe containing a single large stone. In color the fruit is dark blue, but appearing considerable lighter due to being covered by a heavy bloom.

Condalia lycioides bush
7 feet high

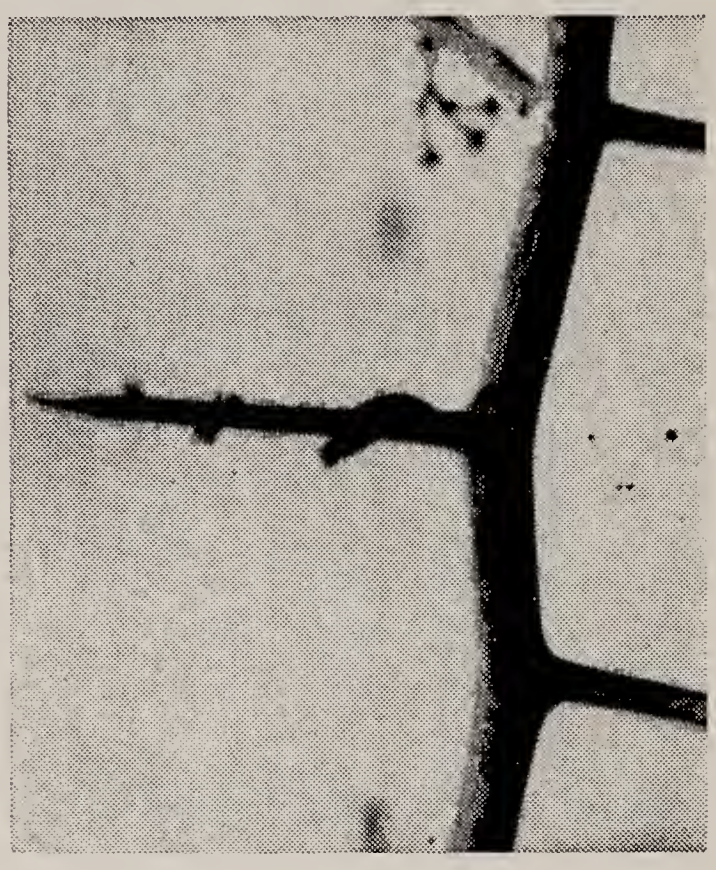


Branch of Condalia lycioides, X 1/5

DISTRIBUTION:

In Mexico the Gray-Thorn is found in the states of Baja-California, Sonora, Chihuahua, Nuevo Leon, San Luis Potosi, and Zacatecas. In the United States it extends from West Texas through New Mexico, Arizona and into southwestern California. In Arizona the range extends from the Grand Canyon in Coconino county to Mohave then southeastward through the south central part to Cochise, Santa Cruz, Pima, and Yu-

ma counties. This plant is found in the **Larrea** (Creosote-bush) **Prosopis** (Mesquite) association and the desert grassland; ranging in elevation from 1,000 to 5.000 feet. On dry plains, mesas, or slopes **Condalia** occurs as individual plants, but along the margins of washes or moist sites it forms inpenetrable thickets.



Close-up of pointed branch X 1¼

UTILIZATION:

Condalia used in combination with Palo-Verde, Mesquite, Acacia, and Ironwood arranged in an overlapping staggered planting, effects and excellent natural screen. The rey color contrasts with the yellow-greens and brown-greens so prevalent in much desert vegetation. It can be used individually for its thorny aspect or as an inducement for birds that utilize it for cover and feed heavily on the berries.

CULTURE:

The Gray-Thorn requires full sun and space for extended lateral growth. It grows equally well in rocky or deep homogeneous soils particularly those of loam or decomposed granite. Shedding its leaves during drought, **Condalia** is capable of withstanding a considerable period without water. Bimonthly waterings during summer months will be sufficient to maintain the plant.

PROPAGATION:

When sedded in decomposed granite soil in plastic pots at eighty degree air temperatures, **Condalia** germinates in ten to twelve days. This plant is slow in growth, attaining only four inches in five months. In the juvenile stages it will require protection from rabbits and ground-spuirrels in areas where these are a problem.

AVAILABILITY:

Condalia is not grown commercially and it not available in nurseries. Seed can be collected in mid and late summer for propagation. With the owners permission, small plants can be dug up on private land and transplanted to the home garden. The top should be trimmed to balance it with the remaining root structure. Immediate transplanting with heavy watering will greatly insure success.

REMARKS:

Livestock and wildlife do not utilize this plant as browse and in some instances it becomes a range pest. Indians are reported to have used concoctions of the plant in the treatment of sore eyes. Portions of the Grey-Thorn roots have been used in Mexico as a substitute for soap. The berries are edible and are relished by the summer resident bird population.

REFERENCES

Benson and Darrow — Trees and Shrubs of the Southwestern Desert.

Dayton, N. A. — Important Western Browse Plants.

Goldman, E. A. — Biological Investigations in Mexico.

Kearney and Peebles — Arizona Flora.

Little, E. L. — Southwestern Trees.

Cory and Parks — Catalogue of the Flora of the State of Texas.

CADILLOS
COCKLEBUR
ASTER FAMILY

XANTHIUM COMMINS BRITTON
COMPOSITAE

This common and troublesome weed, which thrives with maddening independence in the same fields where one attempts to overcome the difficulties of growing more useful plants, has adequately provided for the continuance of its species. It produces seed burrs that cling fast to whatever touches them, and which are thus carried away to take root in some other fertile spot.

Not only does it draw a great deal of nourishment from cultivated ground, but in the seedling stage it may also cause the death of young lambs and pigs who are attracted by its inviting green foiliage. Moreover, the burrs often become firmly lodged in sheeps' wool, thus detracting from its value, and necessitating their removal from the fibers.

However, **cadillos** has some good points. An oil can be extracted from the burrs and used in paint and varnish. Three **cadillos,** boiled in a cup of water, arrest the worst case of diarrhea. Nor is its utility limited to the burrs, for a poultice made of the leaves and applied to the wound is reputedly a specific for rattlesnake bite. It is obviously impossible to determine the exact origin of the use of **cadillos** for snakebite, but we do know that this is an extremely old remedy, as "The Historie of Plantes", by Dodoens, published in 1578, tells us that "the iuyce of the great Burre, dronken with olde wine, healeth the bitings and stingings of venemous beasts and serpentes".

Xanthium sacchratum
Arizona Cocklebur

Burrs of Xanthium
sacchratum X 1¼

According to a Santo Domingo Indian, cuts and wounds on stock can be cured easily by mashing the green leaves and burrs, or grinding the dried burrs, then putting them — mixed with lard or salt — on the affected part.

* * *

Ethnobotanical expert from 'Healing Herbs of the Upper Rio Grande' — L.S.M. Curtain, Laboratory of Anthropology, Santa Fe, N. M.

Sixty new plastic markers, on steel posts, have been placed in front of shrubs, annuals and trees not mentioned in our crowded 'Self-conducted Nature Walk's pamphlet. Markers are 3" x 5".

These markers were made possible by an anonymous one hundred dollar gift and are greatly appreciated by our many visitors who make the tour thru the Garden.

CALENDAR OF EVENTS FOR FEBRUARY

Feb.	2	CACTOMANIACS Meeting	8 P.M.
	3	CLASS — Desert Survival Plants	3 P.M.
	4	ILLUSTRATED LECTURE — Arizona Wildflowers	3 P.M.
	10	CLASS — All day Field Trip	9:30 A.M.
	11	ILLUSTRATED LECTURE — Ariz. Trees, Shrubs	3 P.M.
	18	ILLUSTRATED LECTURE — Ariz. Birds, Reptiles	3 P.M.
	21st to 28th	— 13th ANNUAL CACTUS SHOW	9 A.M

SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

MARCH, 1960

Dish Garden of Leaf Succulents with accessories entered by Mrs. O. Friedricks, Wondervu, Colo.

REG-MANNING

SAGUAROLAND BULLETIN

Published and owned by the Arizona Cactus and Native Flora Society, sponsors of the Desert Botanical Garden of Arizona, P.O. Box 547, Tempe. Saguaroland Bulletin attempts to promote the Garden and to provide information on the desert plants and their culture. Subscription $5.00 per year, the subscription including active membership in the Society and the Desert Botanical Garden. Issued 10 times a year.

W. HUBERT EARLE, Editor

Volume 14 FEBRUARY, 1960 No. 2

Arizona Cactus and Native Flora Society

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Desert Botanical Garden of Arizona

STAFF

Director ... W. Hubert Earle
Consulting Botanist ... James A. McCleary, Ph. D.
Horticulturist ... John H. Weber
Bookstore ... V. Edgar Jones
Student Horticulturist ... Demetrios Vlachos, Greece
Student Horticulturist ... Miqdad Annab, Jordan
Student Horticulturist ... German Pabloes, Mexico

Garden open daily, including holidays, 9 A. M. to 5 P. M. from September 1st to July 1st

REPORT OF THE 13th ANNUAL CACTUS SHOW

The 13th Annual Cactus Show held Feb. 21st to the 28th in the Webster Auditorium was the best yet in relation to the number of exhibitors and the high quality of plants, arrangements, dish-gardens, etc. that were entered for competition.

This was the first time in the history of the 13 shows that the weather was against us. The shirt-sleeve weather of past years had always given us a high attendance but the cool and windy weather of this year cut our attendance about a third.

The Phoenix-Gazette, co-sponsors of the Show, generously gave us excellent pre-show and show coverage with stories and photographs of exhibits and the Garden, that we greatly appreciated.

Judging of the many exhibits was completed by noon, then the doors of the Auditorium were opened to a crowd of expectant and appreciative visitors. Our team of judges, who did a fine job and no complaints were registered, were Mrs. Joseph Birchett, Tempe; Whitman Evans, Phoenix; Salvadore Macri, Phoenix and Charles Conley, Tempe. We certainly wish to extend to them our thanks for a job well done and also to the Clerks, Mrs. Isabelle Holt, John H. Hales, Warner Dodd, William Rand and Mrs. R. McGill who worked one to three days each, accepted 293 entries, assisted the judges and typed up the results for the newspapers and this Bulletin.

No Show or activity can roll along smoothly unless there is ample volunteer help. Our Garden has been most fortunate in having ample qualified volunteers who generously give of their time to see that the Show is most pleasing to the thousands of visitors who come to view it each year. Those who took time away from their homes and jobs in addition to the clerks and judges to help during the Show were — Mr. & Mrs. Hiram Pratt who were on duty eight days; Mr. & Mrs. Paul Becker, Mr. & Mrs. George Lamb, Mrs. Paul Willemsen, Don Bauer, Mr. & Mrs. Dugan Lewis and Chas. Pichelmeyer each two days; Mrs. Chas. Mieg, Mrs. S. Macri, Mr. & Mrs. A. P. Neumann, Mr. & Mrs. C. J. Fuhrer, Mrs. Clinton Campbell, Mrs. D. Champion, Mrs. Harold Covert, Mrs. Felix McWhirter, Faith Carol, Mrs. Hazel Andrew, George Probert, Mr. & Mrs. Rod McGill and their four boys, Mr. & Mrs. Austin Fort, and Howard Schneider, William Dullas, Frank Mounts, Charles Jarnes and Virginia Bakersly, members of Arizona State University Cacti & Succulents course given by Instructor Dave Walkington.

Not to be overlooked was one of the main volunteers, Mrs. W. H. Earle, who served 131 meals for those volunteers who worked all day. Our staff members John Weber did a fine job of staging the Show, Mr. and Mrs. E. Jones took care of stock and the Bookstore, Demetrios Vlachos, Miqdad Annab and German Pabloes looked after parking and many other jobs.

During the Show we were making plans for the 14th Annual Cactus Show which will be held next year. We hope to have the use of all the Webster Auditorium for displays as the Bookstore will, we hope, be installed in a new Visitors Reception Bldg. in the summer. This will then increase our show space by 30% and will be greatly appreciated by our many exhibitors who are planning on exhibiting next year.

13th ANNUAL CACTUS SHOW WINNERS

Sweepstakes

CACTI — August Hermann, 2221 N. 29th St.
LEAF SUCCULENTS — Roderick McGill, Rt. No. 1, Box 292, Glendale Ave.
ARRANGEMENTS — Mrs. E. S. Tanner, 2250 N. 7th Ave.

Trophy Awards

Best Mammillaria — Miss Maude Colglazier, 366 N. 2nd Ave.
Best Leaf Succulent — Mrs. N. Bloomquist, 381 N. 4th Ave.
Outstanding Cactus — C. C. Pidgeon, 5035 N. 18th Place.
Best Haworthia — Mrs. Paul Willemsen, 7805 Mohave Rd., Scottsdale.
Best Centerpiece — Mrs. August Hermann, 2221 N. 29th St., Scottsdale.
Best Succulent Arrangement — Mrs. Glenn H. Hodson, 6841 Thomas Rd.
Best Dried Arrangement — Mrs. Isabelle Holt, 4648 E. Palm Lane.
Best Collage — Clifford M. Schroeder, 2126 Ventura Drive, Tempe.
Best Painting — Ignatius Banasewicz, 1230 N. 3rd St.
Best Photograph — Howard M. Soule, 338 W. Cinnabar.

Potted Specimen Plants — Mammillaria

Special: Mrs. Maude Colglazier, 366 N. 2nd Ave., Phoenix
1 & 2: August Hermann
3: Charles E. Mieg, Mummy Mt. Estates

Potted Specimen Plants — Coryphantha

1 & 3: August Hermann
2: Warner Dodd, 4723 N. 7th Ave., Phoenix

Potted Specimen Plants — Opuntia

1 & 2: August Hermann

Potted Specimen Plants — Thelocactus

1: August Hermann

Potted Specimen Plants — Echinomastus

2: Warner Dodd

Potted Specimen Plants — Lobivia

1: Isabelle Holt
2: Warner Dodd

Potted Specimen Plants — Echinopsis

2: Mrs. Charles F. Garland
3: Mrs. Clinton Campbell

Potted Specimen Plants — Astrophytum

1: August Hermann
2: Bill Thornton, Tucson

Potted Specimen Plants — Cereus

1, 2 & 3: August Hermann

Potted Specimen Plants — Ariocarpus

1: Bill Rand, 2605 W. McClelland, Phoenix

Potted Specimen Plants — Echinocereus

2: Mrs. Richard F. Williams

Potted Specimen Plants — Gymnocalycium

1: August Hermann
2 & 3: J. B. Hales, 822 N. 7th St., Phoenix

Potted Specimen Plants — Barrels

1: J. B. Hales
2: Bill Thornton
3: August Hermann

Potted Specimen Plants — Any other species

Special — Mrs. C. C. Pidgeon, 5235 N. 18th Pl., Phoenix
1: Mrs. N. D. Benson, 120 W. Piedmont Rd., Phoenix
3: Bill Rand

Seedlings

1 & 3: Bill Thornton
2: Mrs. Paul Willemsen

Crested Specimen — Crested Cactus — own root

1: J. B. Hales

Succulents — Potted Specimen Plants:

Euphorbia

1: Rodrick McGill, Rt. 2, Box 292, Glendale
2: Fred McClure, 2250 E. Portland, Phoenix
3: Bill Rand

Dudleya

1: Rodrick McGill
2: Mrs. N. Bloomquist
3: Isabelle Holt

Kalanchoe

1, 2 & 3: Rodrick McGill

Aloe

Special: Rodrick McGill
1: Mrs. Richard F. Williams
2 & 3: Mrs. S. R. Stevens

Sedum

1: Mrs. S. R. Stevens
2 & 3: Rodrick McGill

Echeveria

1: Isabelle Holt
2: Rodrick McGill

Haworthia

1: Mrs. Paul Willemsen
2: Bill Rand
3: J. B. Hales

Agave

1: Bill Thornton

Crassula

Special & 1: Mrs. Richard Williams
2: Mrs. C. C. Carter
3: Mrs. S. R. Stevens

Mesembryanthemum

2: Warner Dodd

Any Other Species — potted succulents

Special: Mrs. C. C. Carter
1: Mrs. Richard Williams
2: Isabelle Holt
3: Mrs. Clinton Campbell

Aeonium

Special, 1 & 2: Mrs. N. Blomquist, 381 N. 4th Ave., Phoenix
3: Mrs. S. R. Stevens

Gasteria

1: August Hermann
2: Mrs. Clinton Campbell, 361 N. 4th Ave., Phoenix

Dish Garden — Cacti

1: Mrs. Richard F. Williams, 1429 E. Brill
2: Mrs. S. R. Stevens, 120 W. Missouri
3: Isabelle Holt

Dish gardens — Succulents

1: Helen Priedrichs, Wondervu, Colorado
2: Mrs. Richard F. Williams
3: Isabelle Holt

Dish Gardens — Cacti and Succulents

1: Isabelle Holt
2: Mrs. Charles F. Garland
3: James Badowski, 4608 W. 54th Ave.

Cacti Centerpieces

1: Mrs. R. I. Turner, 324 W. Siesta Way, Phoenix
2: Isabelle Holt, 4648 E. Palm Lane, Phoenix
3: Mrs. Charles F. Garland, 4450 N. 28th Ave., Phoenix

Succulent Centerpieces

1: Mrs. Myron R. Holbert, 608 E. 3rd St., Scottsdale
2: Mrs. R. I. Turner
3: Mrs. A. B. Hermann, 2221 N. 29th St., Phoenix

Cacti and Succulent Centerpieces

1: Mrs. A. B. Hermann
2: Mrs. R. I. Turner
3: Isabelle Holt

Natural Dried Desert Material Centerpieces:

1: Mrs. Richard F. Williams, 1429 E. Brill, Phoenix
2: Mrs. Glenn H. Hodson, 6841 E. Thomas Rd., Scottsdale
3: Mrs. Charles F. Garland

Mexican Indian Influence Centerpieces

1: Mary Lowman, 609 W. Dobbins Ra., Phoenix
2: Isabelle Holt

American Indian Influence Centerpieces:

1: Isabelle Holt
2: Mrs. A. B. Hermann
3: Mary Lowman

Cacti arrangements (accessories permitted)

1: Mrs. Glenn H. Hodson
2: Mrs. Monnie Speck, 3926 S. 3rd Ave., Phoenix
3: Mrs. Richard F. Williams

Succulent Arrangements (accessories permitted)

1: Mrs. A. B. Hermann
2: Mrs. E. S. Tanner, 2250 N. 7th Ave.,
3: Mrs. Monnie Speck

Cacti and Succulent Arrangements

Special: Mrs. S. R. Stevens, 120 W. Missouri, Phoenix
1: Mrs. E. S. Tanner
2: Mrs. A. B. Hermann
3: Mrs. R. I. Turner

Natural Dried Desert Material (accessories permitted)

Special: Isabelle Holt
1: Mrs. E. S. Turner
2: Mrs. A. B. Hermann
3: Mrs. Glenn H. Hodson

Mexican Influence (with accessories)

1: Mrs. E. S. Tanner
2: Mrs. Richard F. Williams

American Indian Influence Arrangements (accessories permitted)

2: Mrs. Glenn H. Hodson

Novelty Arrangements

1: Mrs. S. R. Stevens
2: Mrs. E. S. Tanner
3: Isabelle Holt

Corsages — Succulents

1: Mrs. Glenn H. Hodson
2: Mrs. A. B. Hermann
3: Mrs. E. S. Tanner

Corsages — Dried Desert Materials

1: Mrs. A. B. Hermann
2: Mrs. E. S. Tanner
3: Mrs. Glenn H. Hodson

Button Gardens

1, 2, & 3: Mrs. E. S. Tanner

Miniature Arrangements 5" to 8"

Special: Mrs. E. S. Tanner
1: Mrs. E. S. Tanner
2: Mrs. S. R. Stevens
3: Mrs. E. S. Tanner

Miniature Arrangements — under 5"

Special, 1, & 3: Mrs. E. S. Tanner
2: Mrs. A. B. Hermann

Strawberry Jar

Special: August Hermann, 2221 N. 29th St., Phoenix

Educational

Honorable Mention: Scottsdale High School Biology Class

Black and White Photos — Desert Subjects

1, 2, & 3: Mr. Howard W. Soule, 338 W. Cinnabar

Oil Paintings

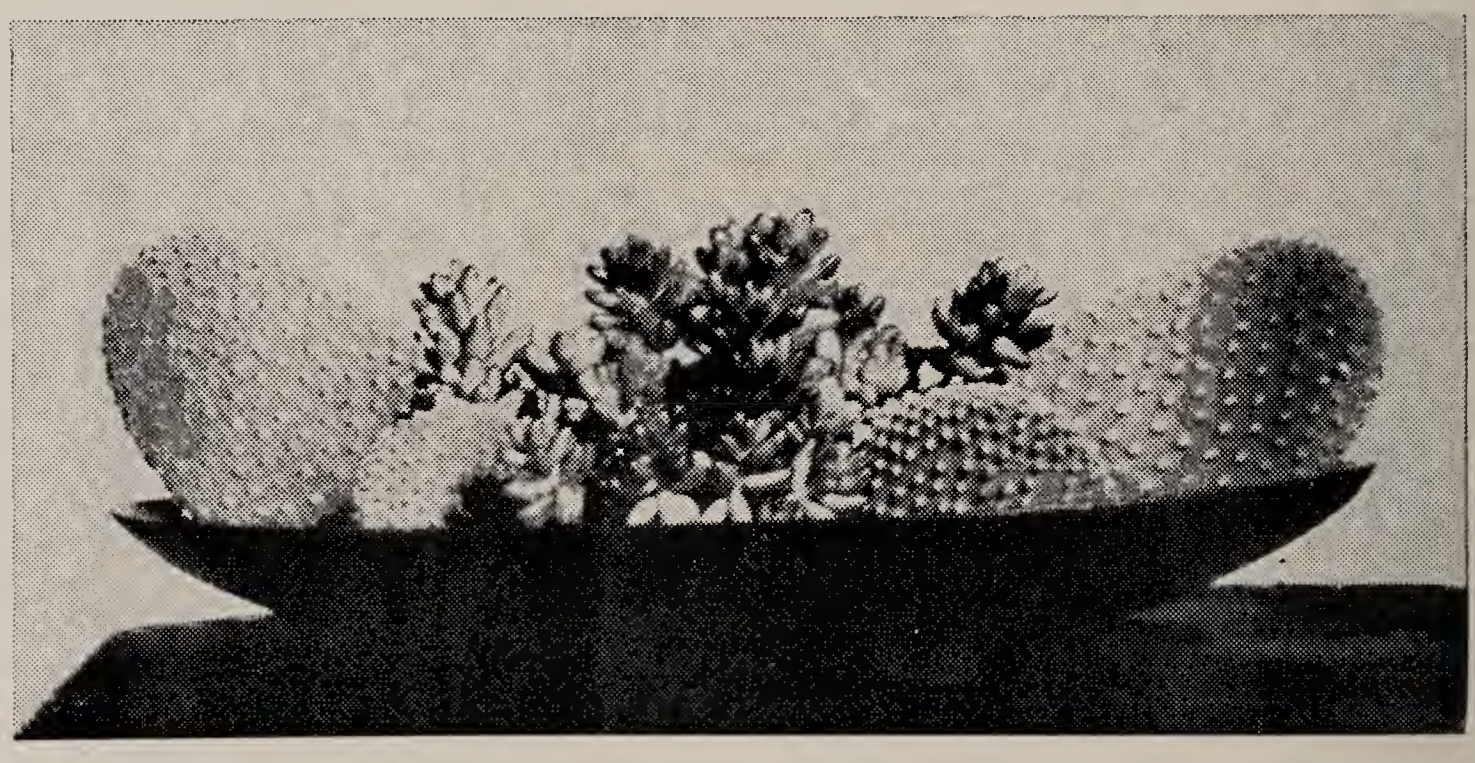
1: Ignatius Banasewicz, 1830 W. 3rd St., Phoenix
2 & 3: Isabelle Holt

Water Colors

1 & 2: Ignatius Banasewicz
3: Isabelle Holt

Collage

1 & 2: Clifford M. Schroeder, 2126 Ventura Dr., Tempe
3: Mrs. E. S. Tanner



Centerpiece of Opuntia microdasys and Sedum guatemalense entered by Mrs. A. Hermann, Phoenix.

All Photographs in this Issue Were Made by John H. Eversole

PLANT OF THE MONTH

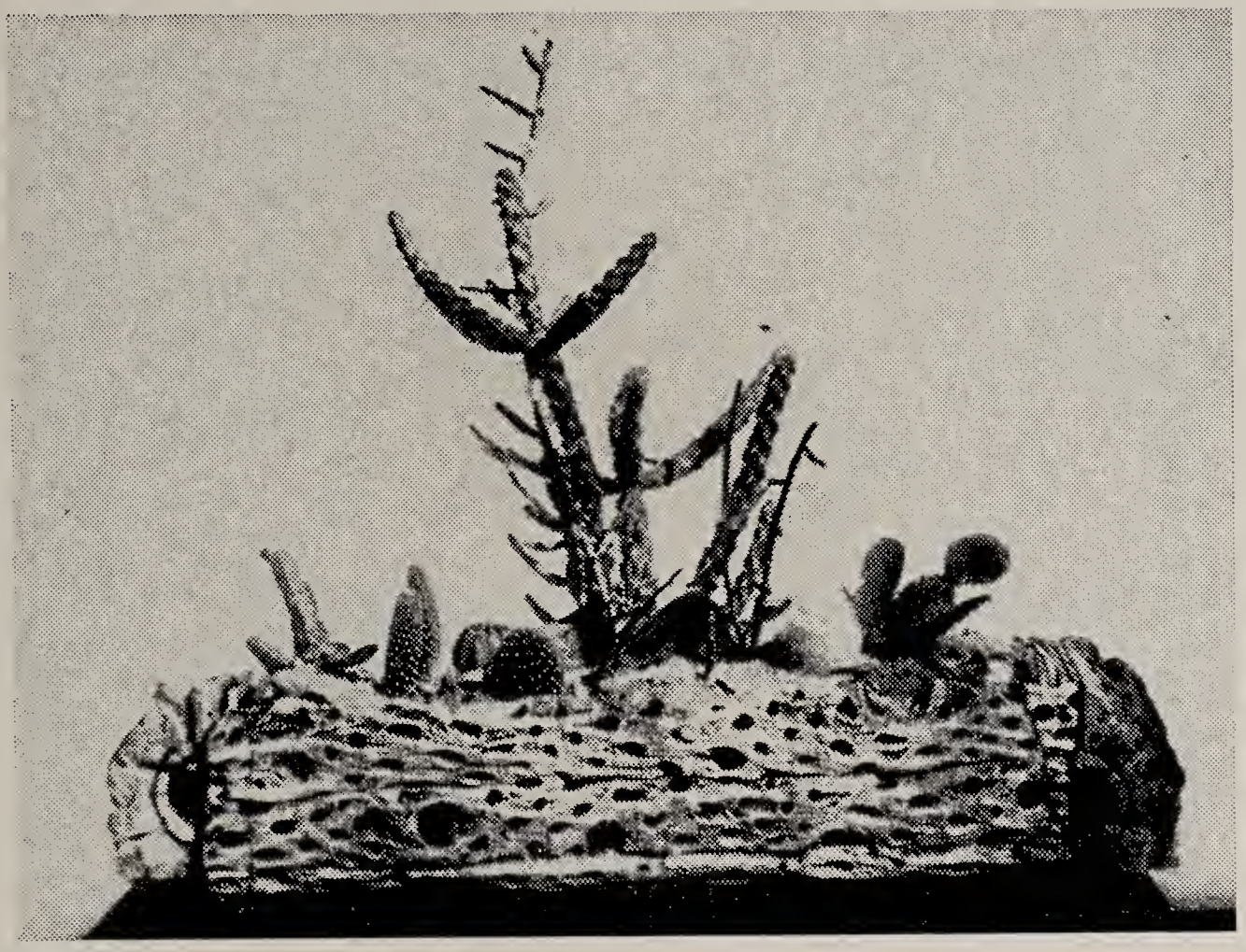
Fishhook Cactus

Mammillaria microcarpa (Fish-hook pincushion) is a small, cylindrical, hooked-spine plant that ranges from California to Texas and south into Mexico. It blooms about every six weeks from April to September with circles of attractive pink flowers followed by red, edible fruits.

PORTION OF LEAF-SUCCULENT SPECIMEN ENTRIES SECTION.
BLACK & WHITE PHOTOGRAPHS IN BACKGROUND

ARRANGEMENTS ON OR AGAINST THE WALL OF CACTUS, SUCCULENTS AND DRIED MATERIAL. LARGE BLACK & WHITE MURAL ON WALL BY HOWARD SOULE, PHOENIX.

MRS. CHAS. MEIG, SCOTTSDALE, INSPECTING UNUSUAL 'COL-
LAGES' MADE OF DRIED PLANTS, SEEDS, ROCKS, ETC.



Cactus garden in a 'cholla' log entered by Mrs. R. F. Williams, Phoenix.

Dried arrangement of American Indian influence entered by Mrs. Isabelle Holt, Phoenix.

Centerpiece of Opuntia santa-rita and Bryophyllum grandiflorum entered by Mrs. I. R. Turner, Phoenix.

Be sure and visit the 1st Annual Phoenix International Garden & Flower Fiesta, Town and Country Village, March 25th thru the 29th. The Garden has installed a 1200 square foot desert scene, titled - 'Desert Sentinels'

March Calendar of Events

1	8 P.M. — Cactomanics — 'Camera Safari in Africa' — Les Mahoney
2	3 P.M. — Class — Deserts and their plants
3	3 P.M. — Lecture — Succulents other than Cacti
9	3 P.M. — Class — Propagation of desert plants
10	3 P.M. — Lecture — Collecting plants in Mexico
16	9:30 A.M. — Class — all-day Field trip
17	3 P.M. — Lecture — Arizona Cacti in bloom
23	3 P.M. — Class — Xerophytes & Mesaphytes
24	3 P.M. — Lecture — Arizona Wildflowers in bloom
30	3 P.M. — Class — Desert survival plants
31	3 P.M. — Lecture — Arizona trees & Shrubs in bloom

SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

APRIL, 1960

A prize winning 'Golden Stars' cactus (Mammillaria elongata) exhibited by Miss M. Colglazier.

REG MANNING

SAGUAROLAND BULLETIN

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W. HUBERT EARLE, Editor

Volume 14 APRIL, 1960 No. 4

Arizona Cactus and Native Flora Society

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Desert Botanical Garden of Arizona

STAFF

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Bookstore — V. Edgar Jones
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Student Horticulturist — Miqdad Annab, Jordan
Student Horticulturist — German Pabloes, Mexico

Garden open daily, including holidays, 9 A. M. to 5 P. M. from September 1st to July 1st

ANNUAL MEMBERS MEETING

The Annual meeting of members of the Arizona Cacti and Native Flora Society, Inc. will be held Sunday, May 1 at 3 P.M. in the Webster Auditorium.

As about 65% of our membership is outside of central Arizona and it is impossible for them to attend, we are enclosing a stamped postal ballot which we ask you to fill in and return before May 1st.

At our winter Executive Board Meeting, Mr. Richard B. Snell, Attorney, was appointed to the unexpired term of the late Wm. Eliot, Chief Counsel.

CELTIS PALLIDA — ULMACEAE (ELM FAMILY)

HACKBERRY

John H. Weber, Horticulturist

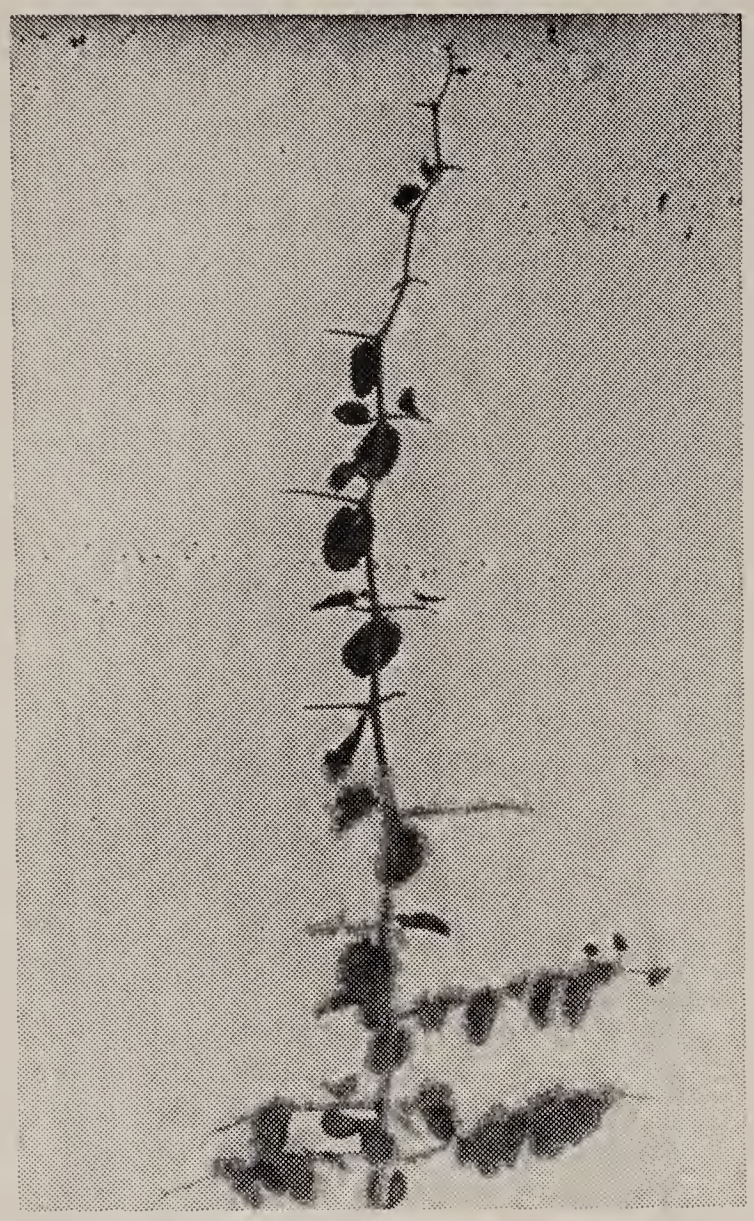
DESCRIPTION:

An evergreen shrub of dense growth that sheds its leaves only during extreme dry periods. It is intricately branched with short spiny lateral branches extending from the main stems. Differing with environmental conditions it will attain a height from three to ten feet becoming a small tree. The leaves are from one to two inches long and not more than one inch wide. They are entire or sparingly dentate along the margin and eliptic to oblong-ovate in shape, the apex being acute. Dull red globose drupes with thin flesh are borne in profusion, these having hard shelled stones and sweetish pulp.

DISTRIBUTION:

Desert hackberry is common on mesas and foothills, upper bajadas, boulder flood plains, and streamway fringes at an elevation ranging from 1,500 to 3,500 feet. It grows on gravelly or well drained sandy soils, particularly those of recent eruptive origin. LARREA (Creosote bush), SIMMONDSIA (Jojo-

Celtis pallida shrub about 9' tall, 12 years old.



3' Celtis pallida branch.

ba), and CONDALIA (Grey thorn) are the plants most prominent in association with hackberry.

Distribution ranges from the northern margins of the lower Colorado River valley of Arizona to the southernmost part of the Sonoran Desert in Mexico. From western Texas on the Rio Grande plains, Blackland prairies, and Transpecos area it extends through Arizona on upland hill and mountain slopes. In lower elevations it grows throughout the desert graslands. Locally it is a prominent floristic component of the Verde and Hassayampa river drainages and is found in Greenlee, Gila, Pinal, Maricopa, Cochise, and Pima counties.

UTILIZATION:

As a feature in the desert garden, Hackberry, can be used wherever a drought resistant tree is needed for screening purposes or for shading of tender plants. It serves well as an attractant for birds and small mammals that relish the fruit. The large dark-green leaves of the Hackberry are a welcome contrast to the light-green or gray leaflets so common to most trees of desert gardens.

CULTURE:

Hackberry requires full sun and an extensive area, particularly when it is allowed to grow with multiple trunks, as it is prone to do if not pruned in the early stages of growth. A rocky or well drained light soil is most desirable and excellent results are obtained if it is established near leech lines or where deep sub-surface water is available. No fertilization is needed.

Close-up of Celtis pallida branch showing leaves on the spiny lateral branches.

PROPAGATION:

CELTIS takes from ten to fifteen days to germinate when daytime temperatures are in the eighty to ninety degree range. A heavy seed crop is borne in mid-summer and can be stored in sealed containers as clean seed or dried fruit. The seed remains viable for more than five years. Embryonic domancy is present and can be broken by stratification of the seed in moist sand at 41 degrees for 60 to 90 days. Impermeability of the seed coat may be a factor in failure of germination. Seedling growth rate is moderate but becomes rapid once established in a permanent planting.

AVAILABILITY:

CELTIS is available in few if any nurseries. The deep tap root makes transplanting difficult so that propagation by seed offers the best chance of success for the individual wishing to acquire this plant for their own garden.

REMARKS:

Range stock and wildlife utilize the desert Hackberry as browse when their normal feed is in short supply. Birds, small mammals, foxes, and coyotes make the fruit a regular item of their diet whenever it is in season. The Papago indians are reported to have utilized the fruit also in like manner. The trunks of larger specimens have been and presently are used for fuel and for fenceposts in areas where no other suitable material is present.

REFERENCES

Benson and Darrow — **Trees and Shrubs of the Southwestern Desert.**

Cory and Parks — **Catalogue of the Flora of Texas.**

Dayton, N. A. — **Important Western Browse Plants.**

Kearney and Peebles — **Arizona Flora.**

Shreve and Wiggens — **Vegetation and Flora of the Sonoran Desert.**

USDA Miscel. Pub. No. 654 — **Woody Plant Seed Manual.**

FLOR de SAUZ
CAPULIN SILVESTRE
Elderberry — Sambucus mexicanus Presl.
Honeysuckle Family — Caprifoliaceae

ELDERBERRY (Sambucus mexicanus) shrub 12' growing along a moist desert wash.

For nearly as long as there has been a language and alphabets to record it, and a **materia medica** to include it, the elderberry has relieved the ills of mankind. One of the earliest Egyptian papri, which was found with the bones o fa mummy in the Theban Necropolis, contained seven hundred remedies in use during the period of Egypt's greatest civilization. This medicinal treatise highly recommended the elderberry. And the Arabs, to whom we owe so much for their preservation of early Christian medical knowledge, have remained for us, in the "Arabian Nights", a recipe for elderberry, from which they made **rob.** **Rob** is the Arabic word for dense, and, in English, it means a thick fruit syrup which has been made by slowly boiling fruit juice, until a great deal of its water content has evaporated. tSory-telling was the Arab's highest form of entertainment, and in the famous Al Mansur hospital at Cairo tales were told at night to the sleepless patients, or they were soothed with syrups and conserves, and lulled to slumber with soft music.

According to German folklore, the hat must be doffed in the presence of the elder-trees, and it may be for this reason that a Dr. Boerhaave, 1668-1738, famous Dutch physician, held **Sambucus** in such reverence for the multitude of its virtues that he removed his hat whenever he passed the shrub. And in certain of the districts in the English Midlands, it was believed that the cross of Christ was made with its wood, and therefore it should not be burned as a fuel or treated with disrespect. But there was another common medieval tradition that this was the tree upon which Judas hanged himself, and probably for this reason to be crowned with elder was, in olden times, accounted by some disgrace.

Sambucus mexicanus branch showing leaves and flower.

The **Sambucus** was well-known in Mexico, and with surprising similarity to the Arabic use, was employed in making **rob de sauco** as a purge. Very small quantities were given, however, for the effects of a large amount were the same as an overdose of a narcotic. The pith and leaves were applied as a cataplasm for hemorrhoids, and its dried flowers were considered excellent for colds, bronchitis, and inflammations of the throat, and were also made into a sudorific.

There are few middle-aged women in America who fail to remember when elder flowers steeped in buttermilk were universally esteemed as a com-

Sambucus mexicanus flower 2/3X.

plexion clarifier.

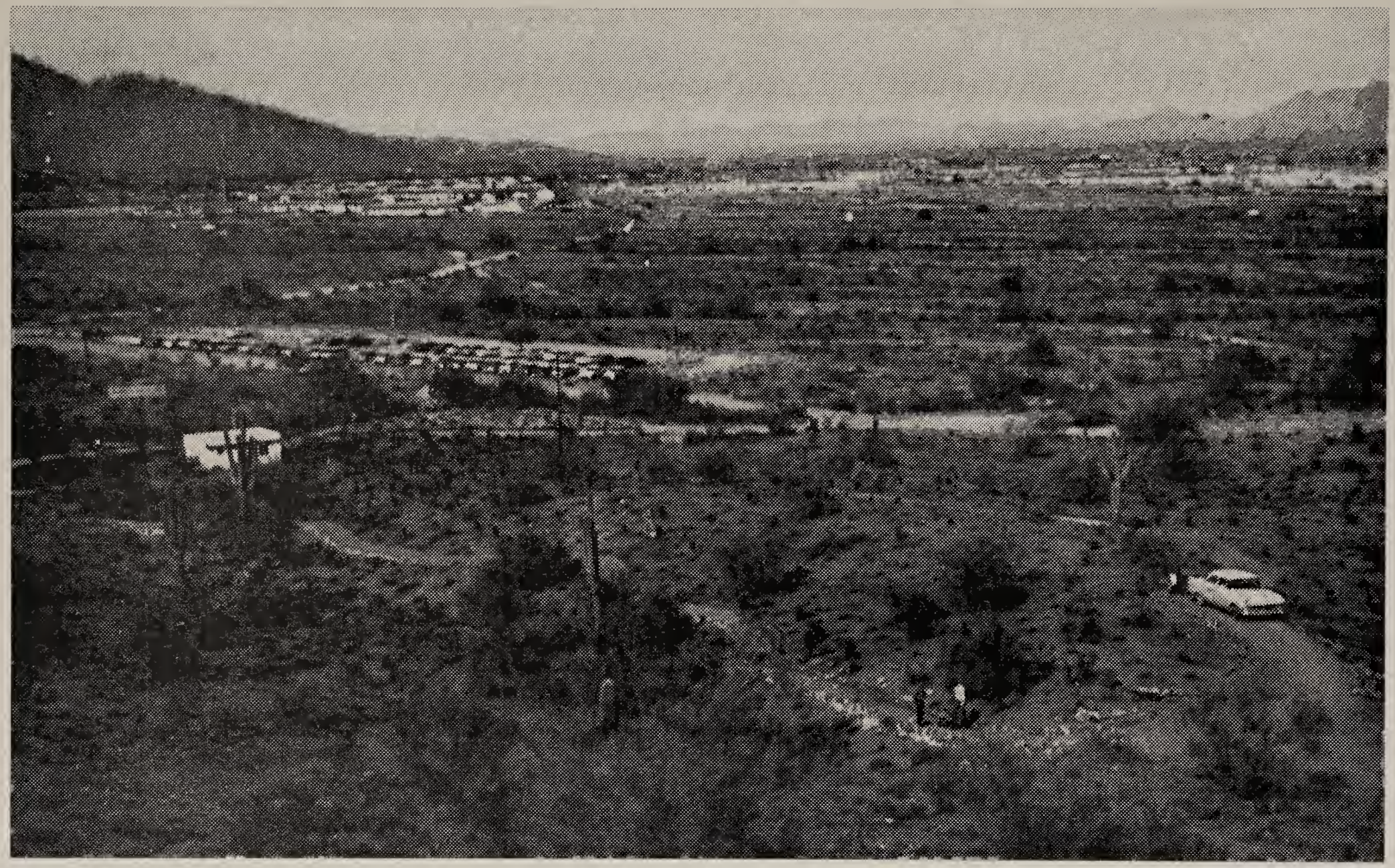
Among the Indians of California, the elder was the "tree of music", and flutes were made of the straight young stems in the springtime, because then itss soft pith could be removed easily. Dr. C. Hart Merriam, in his volume, "The Dawn of the World", gives the following legend of one of the Sacramento Valley tribes, explaining how the elder came to be distributed from British Columbia to Mexico: In the beginning there was only one elder tree, that grew far away in the east toward the rising sun in a den of rattlesnakes, and as the wind swayed its branches they sang together day and night to the two women of the star people that watched over it. Now there was one Wek-Wek, the Falcon, grandson of Coyote-man who made the world, who had heard its music and wanted to possess the tree. So he journeyed to its home, and after mayn importunities persuaded these two heavenly ladies to part with some of its root, that from it many cuttings could be made and all the world could hear its melodies. The old Indians say that in some parts of the country there are still such trees to be found that give off sweet music at night — if one should listen very carefully, for so it used to be.

Nor do the soothing effects of so remarkable a tree pass unnoticed in New Mexico, where the dr yflowers act as a febrifuge. Two teaspoonsful of them are allowed to stand in a quart of water for twenty-four hours, after which it is taken a glassful at a time, until the fever has abated. Moreover, if one pours boiling water on the dry flowers, covers them, and allows them to brew, and then adds this mixture to medicate the bath of a paralytic, he will find relief. Many households have long congratulated themselves on their elderberry wine, for which the preparation becomes an important seasonal event, and one **paisano** who lived high on Cumbres Pass enthusiastically declared that the berries of the **capulin silvestre** were even good for fattening chickens.

Ethnobotanical excerpt from 'Healing Herbs of the Upper Rio Grande' — L. S. M. Curtin, Laboratory of Anthropology, Santa Fe, N.M.

PLANT OF THE MONTH

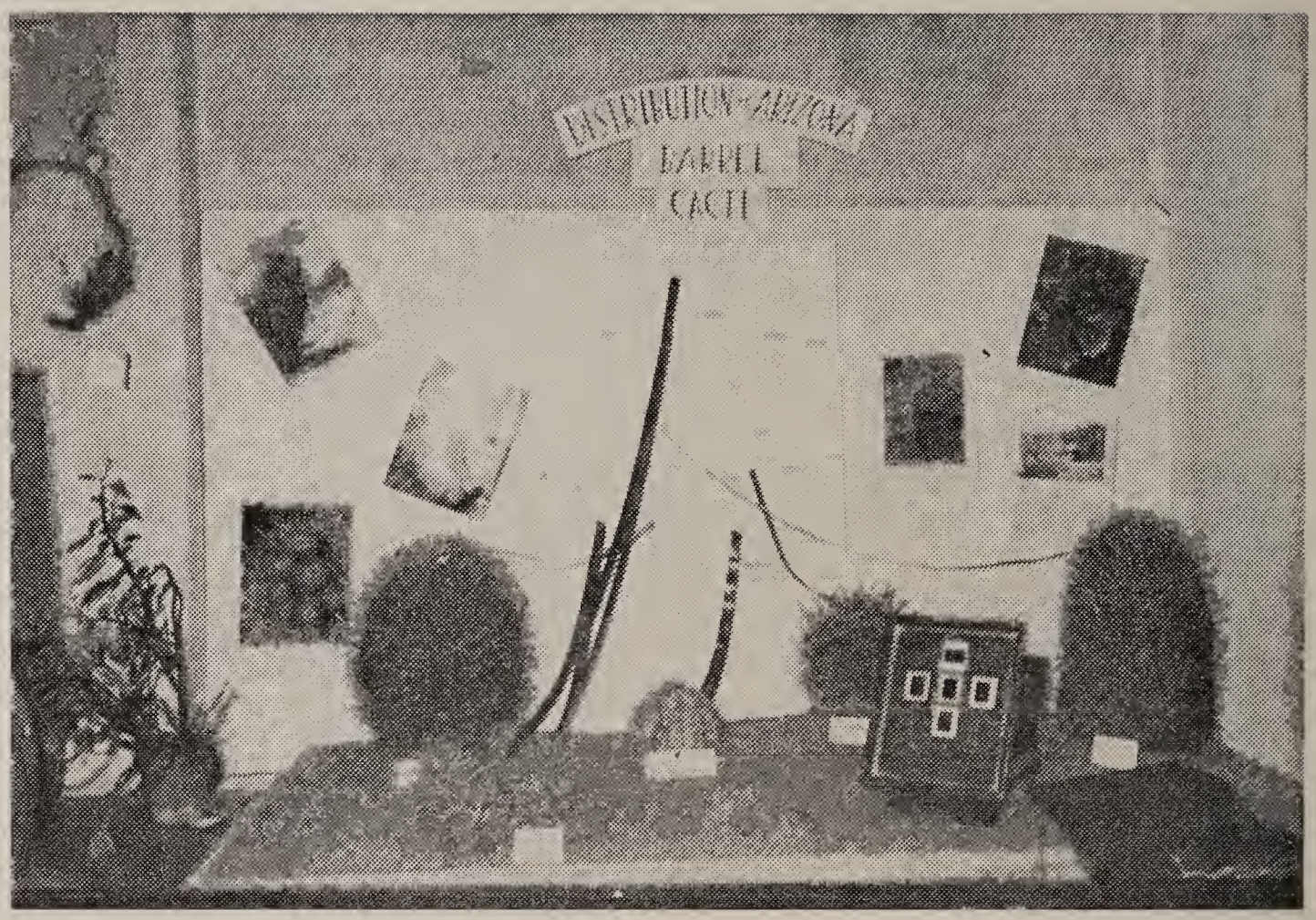
BEAVER-TAIL PRICKLY PEAR (Opuntia basilaris) grows along the Colorado River watershed in the lower elevations of the Colorado desert. The cereise blossoms are quite showy and the beaver-tail shape of the pads give the plant its common name of Beaver-tail prickly pear. The pads arise from the base of the plant and thus the name O. basilaris.



A new memorial trail being built up and over a low hill by our students during the holiday season. This will accommodate foot and car traffic and will edge an area devoted to student study of Arizona plants. Note how the subdivisions are now up to our north property line. Paradise Valley and Scottsdale area to the upper right of the photo.

Our winter class on a field day trip to Coon's Bluff along the Verde River. This was one of our unusual cold wet days. It was raining when this picture was taken by your Editor.

A portion of the 66 persons who made the Spring class field trip to the Superstition Mts. Over 30 species of wildflowers were found on the trip. The earlier than usual hot dry winds dried up the wildflowers this year in the lower elevations.



An educational exhibit placed in the 13th Annual Cactus Show by the Garden showing distribution of the Barrel Cacti thru Arizona.

CALENDAR EVENTS FOR APRIL

5th 8 P.M.—Cactomaniacs. 'Desert Survival' — Chas. Mieg.
'Cacti Close-ups' — Kodachrome slides by M. A. Schuele, Chandler, Arizona

6th 9:30 A.M.—Spring Class Field Trip

7th 3 P.M.—Illustrated Lecture — 'Arizona Birds & Reptiles'

14th 3 P.M.—Illustrated Lecture — 'Arizona Cacti in Bloom'

21st 3 P.M.—Illustrated Lecture — 'Arizona Wildflowers in Bloom'

23-24th Host to the New Mexico Cactus Society

28th 3 P.M.—Illustrated Lecture — 'Arizona Trees & Shrubs'

May 1st 3 P.M.—Annual Meeting of the 'Arizona Cacti & Native Flora Society, Inc.'

SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

MAY, 1960

OPUNTIA CLAVATA

Collected by Art White north of Tonalea, Arizona. Type plant has dagger-like spines, this plant has weak, acicular spines.

REG MANNING

SAGUAROLAND BULLETIN

Published and owned by the Arizona Cactus and Native Flora Society, sponsors of the Desert Botanical Garden of Arizona, P.O. Box 547, Tempe. Saguaroland Bulletin attempts to promote the Garden and to provide information on the desert plants and their culture. Subscription $5.00 per year, the subscription including active membership in the Society and the Desert Botanical Garden. Issued 10 times a year.

W. HUBERT EARLE, Editor

Volume 14 | May, 1960 | No. 5

Arizona Cactus and Native Flora Society

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Secretary	Angela Bool	Chief Counsel	Richard B. Snell

BOARD MEMBERS

Edward L. Burrall — Charles Mieg — Mel Hinman
Reg Manning

Chairman of the Advisory Board — Leslie J. Mahoney

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Desert Botanical Garden of Arizona

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Consulting Botanist ..... James A. McCleary, Ph. D.
Horticulturist ..... John H. Weber
Bookstore ..... V. Edgar Jones
Student Horticulturist ..... Demetrios Vlachos, Greece
Student Horticulturist ..... Miqdad Annab, Jordan
Student Horticulturist ..... German Pabloes, Mexico

Garden open daily, including holidays, 9 A. M. to 5 P. M. from September 1st to July 1st

ANNUAL BOARD MEETINGS

The Annual meeting of members was held Sunday, May 1st presided over by President Lou Ella Archer. Reg Manning and Charles Mieg were reelected to the Official Board for three year terms.

The annual meeting of the Official Board was held May 9th. Encouraging reports on the growth and future of the Garden were given by members of the Board.

A special Board meeting will be held June 13th at which time bids will be opened for the construction of the new Visitors Reception Bldg.

FINANCIAL REPORT

May 1st, 1959 to April 30th, 1960

INCOME		OPERATING EXPENSES	
Retail sales	$21,956.04	Purchase for resale	$12,709.49
Contributions	1,049.42	General operating	3,550.35
Memberships	2,730.00	Bldgs. & Improvements	1,159.14
Sale of Seeds	2,479.54	Utilities	1,486.15
Sale of extra plants	232.75	Insurance	867.16
Wholesale (Books)	81.31	Salaries	15,341.60
Endowment income	11,154.93	Operation of car	546.01
Miscelalneous (Sales tax)	691.20	Miscellaneous (Sales tax, etc.)	885.77
	$40,375.19		$36,545.67

ASSETS

Accounts receivable	$ 35.68		
Inventory	2,214.54		
Industrial Comission	96.00		
		2,346.22	
CASH			
Valley National Bank (Checking)	3,138.67		
Valley National Bank (Savings)	$11,713.33		
1st Fed. Savings (Life members(	855.14		
Petty Cash on hand	22.00		
		15,729.14	$18,075.36
LIABILITIES			
Reserve for State Withholding Tax		7.42	
Golden Books Inc. (Bill held for credits)		82.48	89.90
Net Cash			$17,965.46

* * * *

MEMBERSHIPS IN THE GARDEN

1957-1958	475 members
1958-1959	540 members
1959-1960	625 members

BUDGET 1960-1961

Anticipated Income		Anticipated Operating Expenses	
Retail Sales	$24,000	Purchases for resale	$13,000
Contributions	1,000	General operating	3,000
Memberships	3,000	Bldgs. & Improvements	1,000
Sale of Seeds, etc.	2,500	Utilities	1,500
Wholesale (Books)	1,000	Insurance	800
Endowment	11,000	Salaries	15,000
Miscellaneous	700	Operation of auto	600
		Publishing of book	2,100
	$43,200	Miscellaneous	900
			$37,900

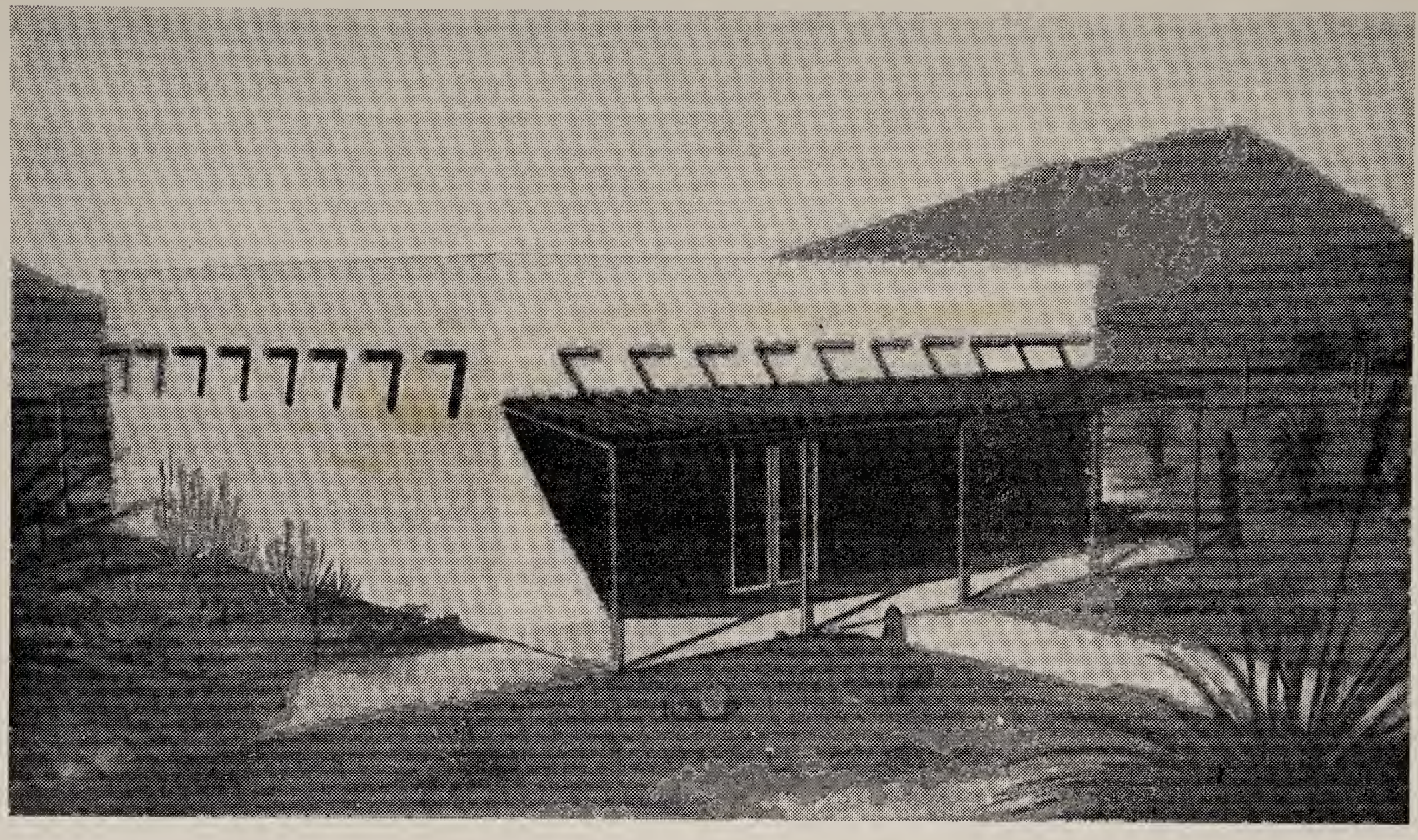
BUILDING & IMPROVEMENTS — SUMMER 1960

Visitors Reception Building	$11,000
Arizona Trail & Ramada	400
Archer House Car Port	600
Extension of septic tank drainage	100
Two seed collecting trips in Mexico	400
Pressure tank, pump & lines	500
Widen & black-top paths	200
Tape — Indian Use of Plants	300
	$13,500

* * *

ATTENDANCE 1959-1960 was about 105,000 at the Garden plus the following - -

	Activities at the Garden		Activities away from the Garden	
25	Lectures (Illustrated)	1,066	Lectures to 5 service clubs	262
12	Classes	458	Ariz. Fed. of Garden Clubs	365
8	Cactomaniac meetings	580	Biennial Cactus Convention-St. Louis	165
13th	Annual Cactus Show	7,618	Ariz. Nurseryman Assoc.	106
53	Elementary Schools	2,198	Ariz. Gardening Assoc.	22
7	High Schools	547	Mineralogical Society of Ariz.	42
3	Universities	1,221	Four Field trips	149
29	Boy, Girl Scouts, Cubs, Camp Fire	504	Total	1,111
5	Garden Clubs	218	EXHIBITS	
	Desert Biology Institute	115	Ariz. Federation of Garden Clubs	
8	Service Clubs	379	International Flower Fiesta	
12	Convention groups	296	Radio — T-V — Phoenix Stations	
	Civilian Defense	23		
2	Camera Clubs	64		
	Y.M.C.A. Day Camp	90		
	Total	15,377		



The proposed new Visitors Reception Bldg., Lescher & Mahoney — Architects, to be erected north-west of our large lath-house this summer. This Spanish type building will be 40' by 40' with 8' porches on each end. In it will be the reception room, sales counter, display cabinets, rest-rooms, stock and storage rooms.

PLANT OF THE MONTH

Opuntia engelmannii — Engelmann's Prickly Pear. A common, large, spreading, bush prickly pear without a central stem. A prolific bloomer with lime-yellow flowers that turn to a coppery-yellow in the late afternoon. Its fruits are relished by birds, rodents and forage animals. Fine jellies and conserves can also be made from the fruit.

SIMMONDSIA CHINENSIS BUXACEAE (Box Family)
JOJOBA, DEERNUT

John Weber, Horticulturist

A 3' - 6" shrub of Simmondsia chinensis with Opuntia phaeacantha in background.

Description:

A dichotomously branched, bushy shrub growing to six feet in height and width. The opposite paired leaves are simple, entire, and have an elliptic shape. They are thick and leathery with a bluish cast and are persistent throughout the year. Unisexual, apetalous flowers occur in axillary clusters. Male flowers are small and yellowish in color contrasting to the larger, green female flowers; each sex occuring on separate plants. Flowering from March to May, the plants bear mature fruit from June through late fall. Somewhat resembling acorns, the one-seeded capsules split at maturity along three lines, the seed in time dropping out. About the size of a peanut, this seed has a nutty flavor, but is often bitter with tannin. In addition to tannin it contains a seed oil which in fact is a natural liquid wax and not fat as is found in most plants.

Distribution:

In California **Simmondsia** extends from near San Diego to the Colorado desert region about the Salton Sea basin. From the Kofa and Castle Dome mountains of Yuma County Arizona, it ranges south and east through Pima and Cochise Counties and east and north through Maricopa, Yavapai, Gila, and Greenlee Counties. Found also in the Mexican states of Sonora and Baja California, Jojoba ranges to near Guaymas on the mainland and to almost the tip of the peninsula. Commonly growing in association with **Larrea** (Creosote bush), **Simmondsia** extends in elevation from 1,000 to 5,000 feet on rocky or gravelly soils of well drained slopes, dry foothills, and along washes.

Utilization:

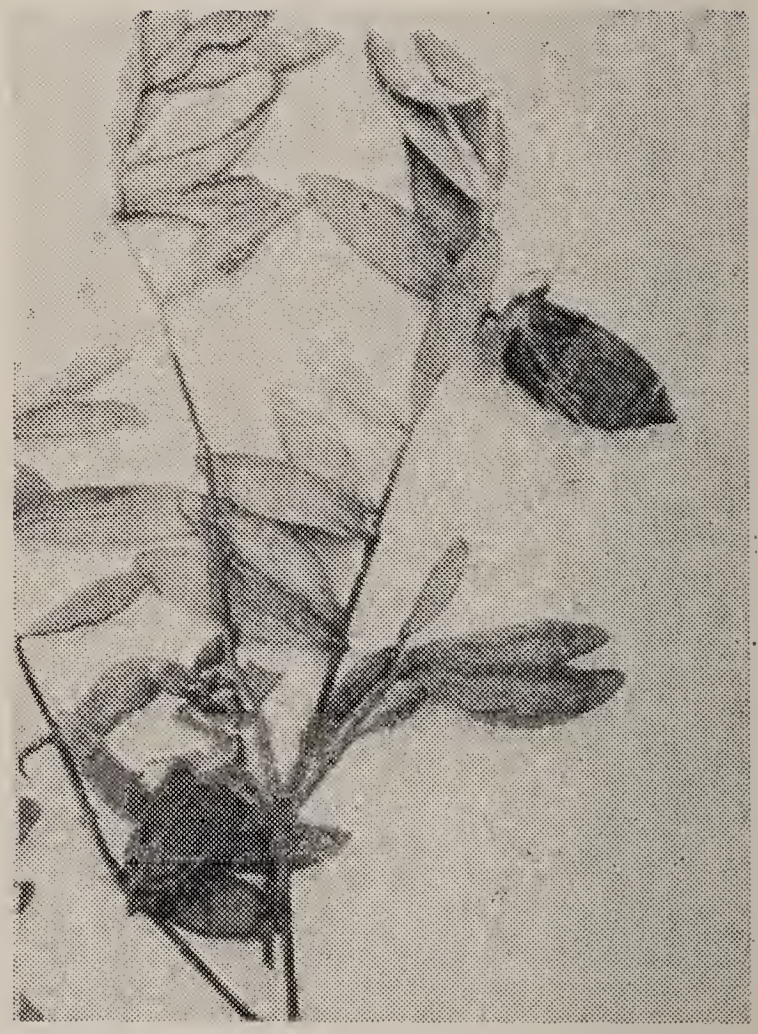
Due to a very slow growth rate, Jojoba may never become as popular in desert landscaping as have many other

The thick leathery leaves of Simmondsia chinensis are quite compact. 2/3 x

native shrubs. It could, however, very well be used individually as a foundation shrub and its excellent recovery from shearing with a slow growth rate make it ideal for hedge plantings on dry areas. Persons wishing to encourage Kangaroo rats, mice, groundsquirrels, and other small mammals about their desert homes would do well to establish Jojoba as a food plant. Several plants would be needed to insure having both sexes present for pollenization.
Culture:

Full sun or a south and west exposure are required by **Simmondsia** as well as a well drained rocky or gravelly soil. In the natural habitat rainfall varies at the different elevations from three to twenty inches. Jojoba, therefore, has a wide tolerance to water if grown with proper soil drainage. Bimonthly watering during the hot months of the growing season are adequate to maintain the plant in good form.
Propagation:

Seed can be collected from June through the summer months and may be stored dry for several years under



Herbarium mounting showing the 1" long acorn-shaped fruits of S. chinensis

Male, staminate, blossom clusters of Simmondsia chinensis. 2/3 x

ordinary conditions. No pretreatment of the seed is necessary, but soaking overnight hastens germination. Germination commences in one week, but the seedlings usually do not emerge for a month under greenhouse conditions. The germinative capacity is high in spite of the long emergence period. The best seedbed is partially shaded with a deep well drained soil lightly covered with litter. Under cultivation growth rate is very slow and a seedling may attain only four inches growth in one season.

Availability:

Simmondsia is not known to be available in the trade, however, a few nurseries specializing in desert plants may have it in stock.

Remarks:

Jojoba is browsed extensively by goats, sheep, cattle, deer, and bighorn sheep. On bighorn ranges it is considered one of the best year round forage plants. In protein content it averages 13.5% to a high of 21% and is considered a fattener rather than a muscle builder. The specific importance of this plant lies in the fact that on many desert ranges it is good browse where practically none other exists. In past time the seed served as food for local Indians and as a coffee substitute for prospectors. In a more recent period the seed oil has been used in hair oil and as a substitute for beeswax in some products. In addition to Jojoba, other common names by which the plant is referred are Goat-nut, Coffee-berry, Wild-hazel, Quinine-plant, Bushnut, and Pignut.

References:

Benson & Darrow — Trees and Shrubs of the Southwestern Deserts.

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Russo, John P. — The Desert Bighorn Sheep in Arizona.

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Swank, Wendell G. — The Mule Deer in Arizona Chaparral.

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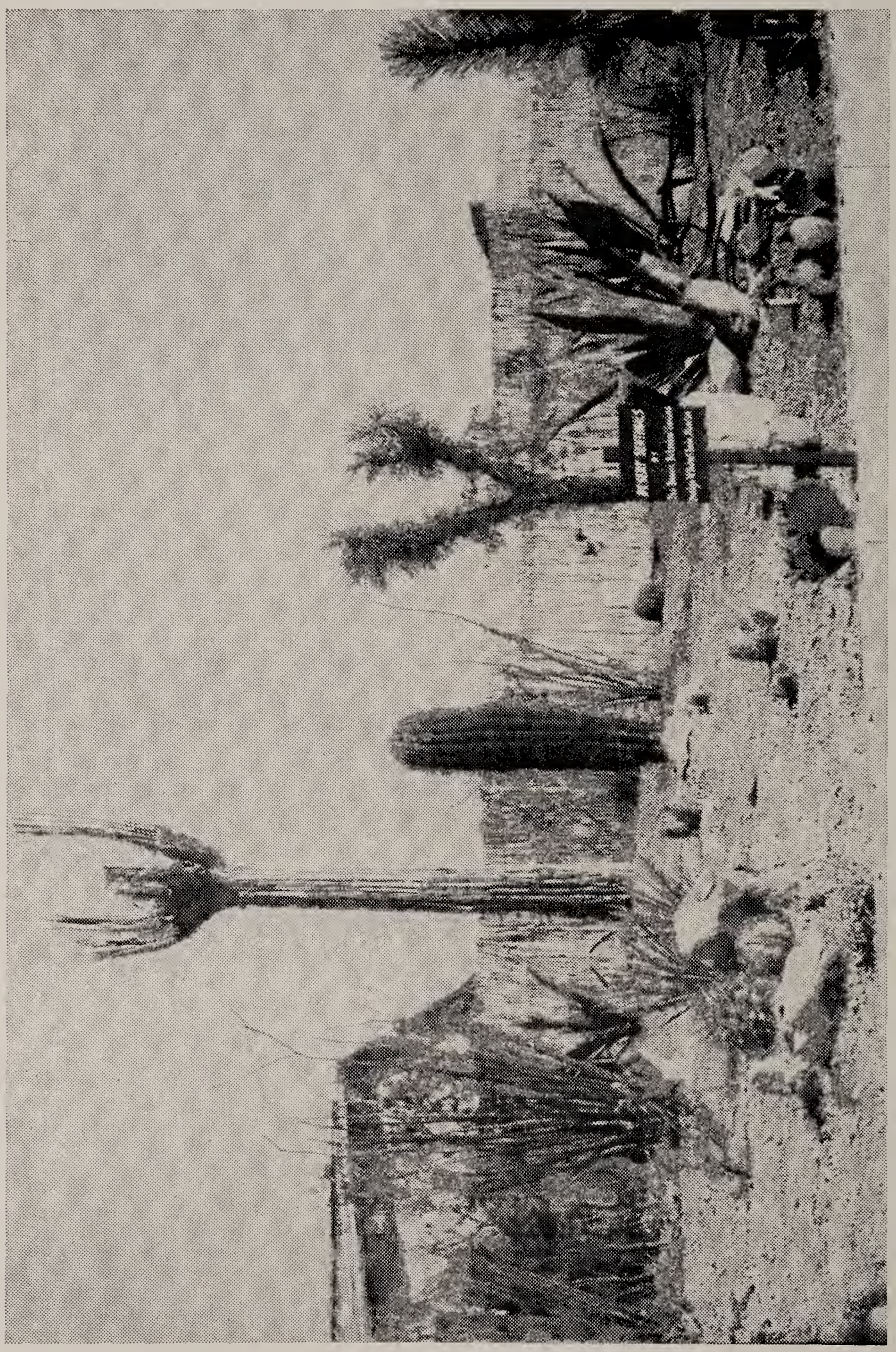


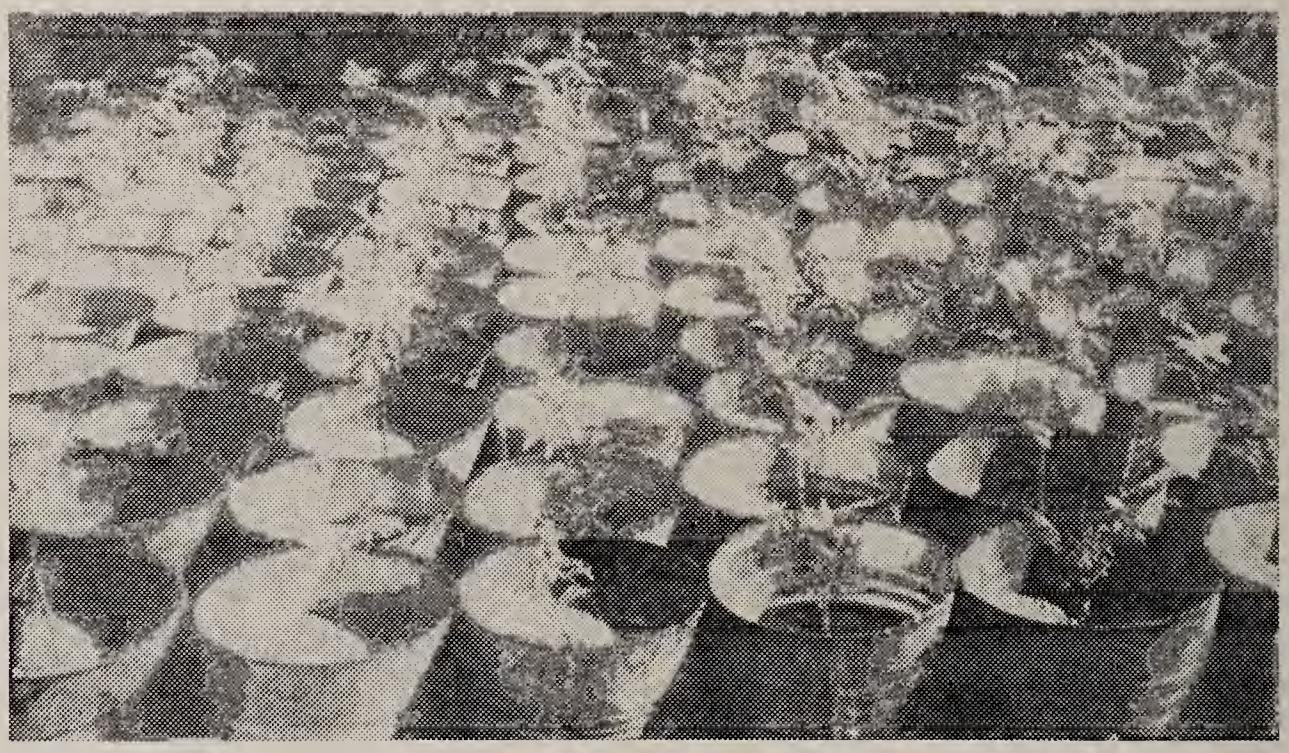
The Garden's 1,200 sq. ft. exhibit 'Desert Sentinels' placed in the International Garden & Flower Fiesta at Camelback Town & Country Village March 25-29 and viewed by over 50,000 persons.

SHRUBS BY THE THOUSANDS

The above 1700 No. 10 cans plus 1000 asphaltum dipped cans, in the background, are needed for our extensive desert plants propagation program this summer.

A small group of about 400 shrubs started from seed that was collected in Mexico the last two years. In the foreground is a group of young century plants, (Agave murphyi).

One year old Blue Palo Verde trees, (Cercidium floridum).



Six month old Desert Fern Trees, (Lysiloma thornberi).

The above trees are a few of the many desert plants left over from our spring plantings. Members may obtain these at one dollar donation per can. Other plants available at same cost are Sweet Acacia (Acacia farnesiana), Mexican Palo Verde (Parkinsonia aculeata), Yellow Palo Verde (Cercidium microphyllum), Desert Willow (Chilopsis linearis), Ironwood (Olney tesota), and Screwbean mesquite (Prosopis odorata).

All of the above plants are excellent for your desert gardens.

SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

JUNE - JULY, 1960

NEED A TAX EXEMPTION?

SEE PAGE 63
FOR DETAILS

REG MANNING

SAGUAROLAND BULLETIN

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W. HUBERT EARLE, Editor

Volume 14 June-July, 1960 No. 6

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Desert Botanical Garden of Arizona

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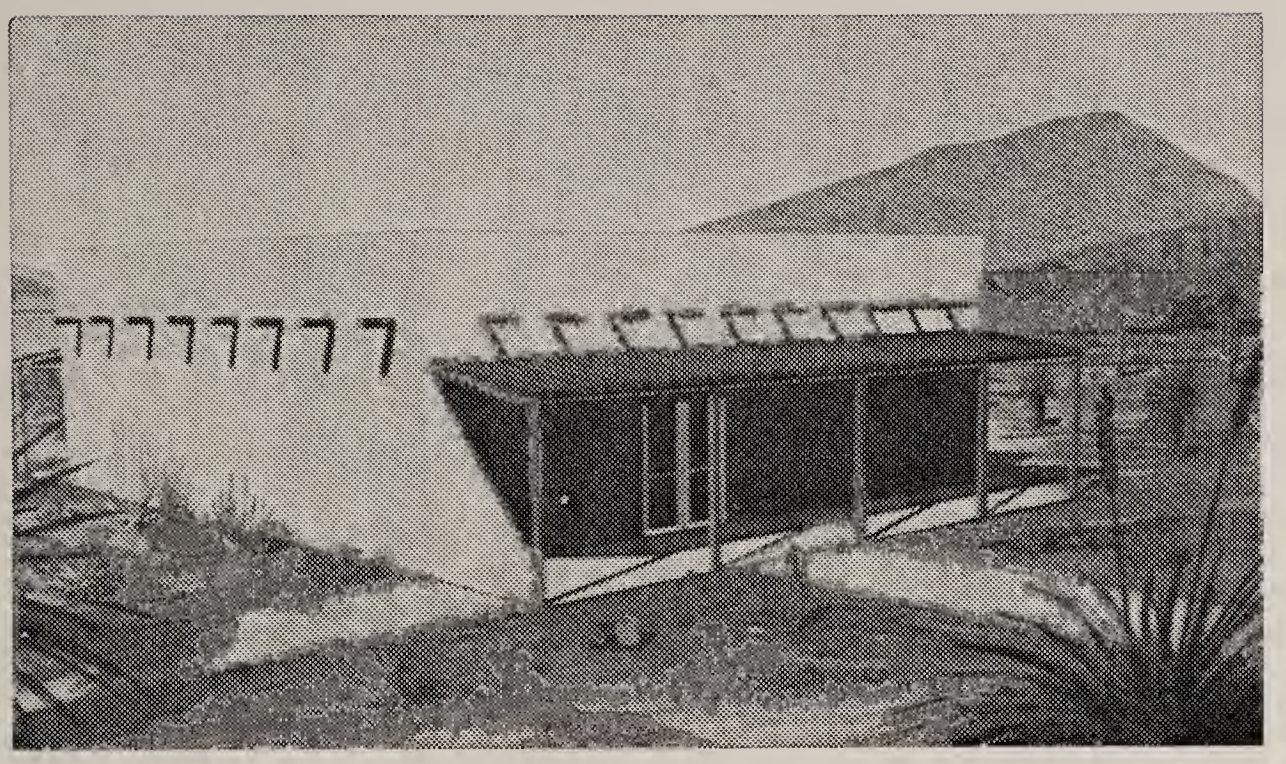
Student Horticulturist.....Miqdad Annab, Jordan
Student Horticulturist.....German Pabloes, Mexico
Student Horticulturist.....Robert J. Rouseau

Garden Closed July and August for Improvements

NEED A TAX EXEMPTION?



Painting by Lescher & Mahoney, Architects, of new Visitors Reception Building.

For the past three years the Saguaroland Bulletin has carried no money appeals for the support of the Garden. We have been most fortunate in the past few years to be able to make many improvements in the Garden, added needed equipment, increased our staff and saved over $11,500 for a contemplated Visitors Reception building, as shown above. With some summer savings we can add another $1,500 to the above amount thus having $13,000 towards this building.

The Executive and Advisory Boards met June 13th to study contractors' bids for the new building and were surprised to find that the lowest bid was about $4,500 above that we had on hand.

The Executive Board is contemplating requesting a loan for the balance as they see the definite need of this building and wish to construct it this summer.

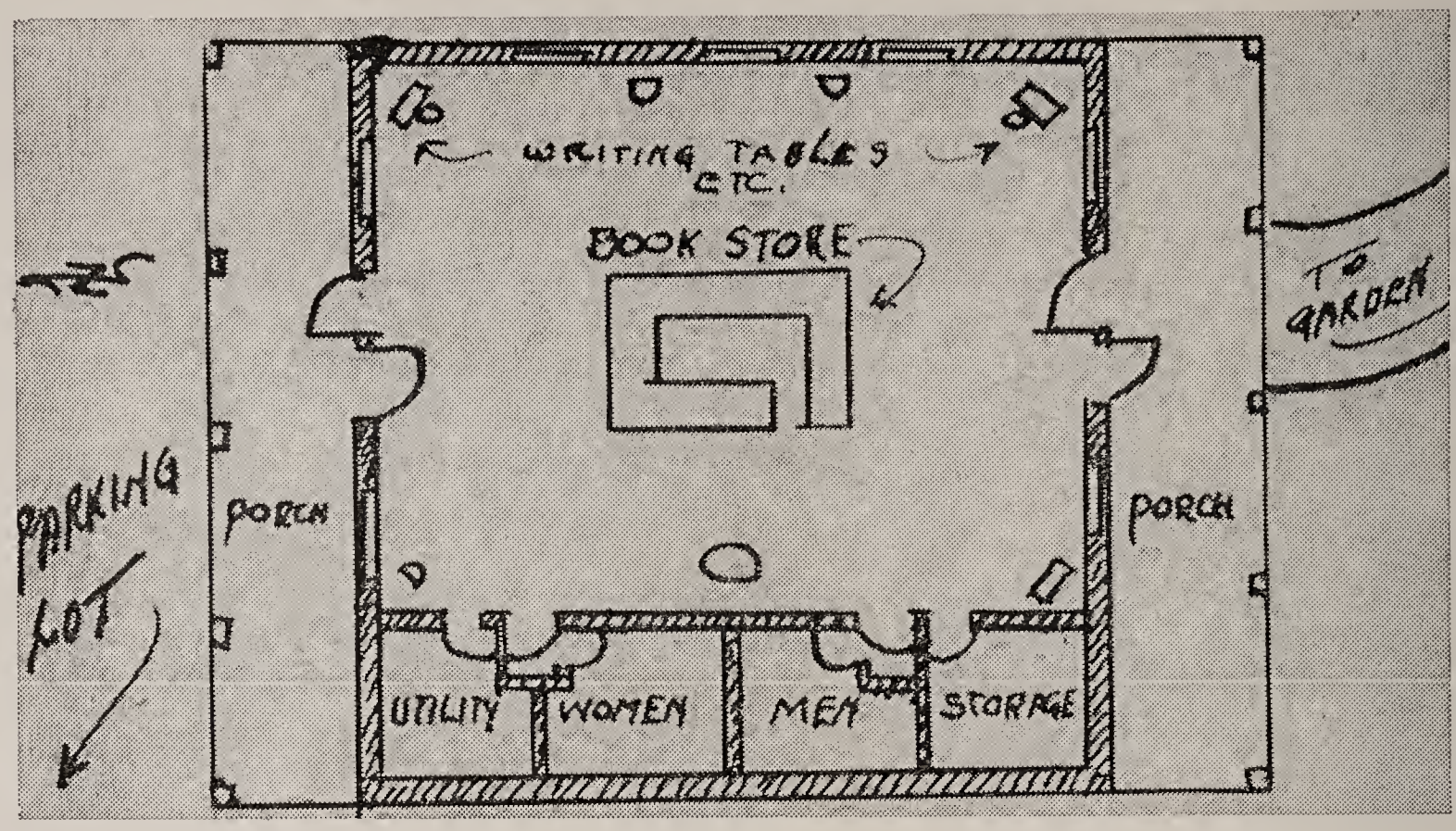
You, and your friends, can help us erect this building and perhaps save our Board from asking for a loan with your tax deductible donations. Please make checks out to the Arizona Cactus & Native Flora Society, Inc. We are a tax-free educational institution and are so listed with the U. S. Treasury Dept., Internal Revenue Service.

This 40' x 40', Spanish type bldg., with two 8' x 40' porches, will be used for the reception and departure of our visitors. The book, etc. sales dept. will be in the center of the bldg. Restrooms, storage and stock rooms will all be inside. A 7½ HP. heat unit will heat and cool the bldg. Seven educational display cases will be mounted in the walls and the exhibits frequently changed.

The June 1960 attendance is twice that of last year and with a mounting number of summer visitors we contemplate remaining open thru the summer and the year round. A cool Visitors Reception bldg. will be a further inducement for members, their friends and visitors to visit the Garden in the summer.

The Webster Auditorium, freed of the Book Sales Dept., will be much more receptive for classes, lectures, exhibits, Garden & Civic Clubs and our Annual Cactus Show.

The Garden marches on with your past, present and future aid.



Layout of Visitors Reception Bldg. All plans, sketches & specifications have been donated by Lescher & Mahoney

BOOK REVIEW

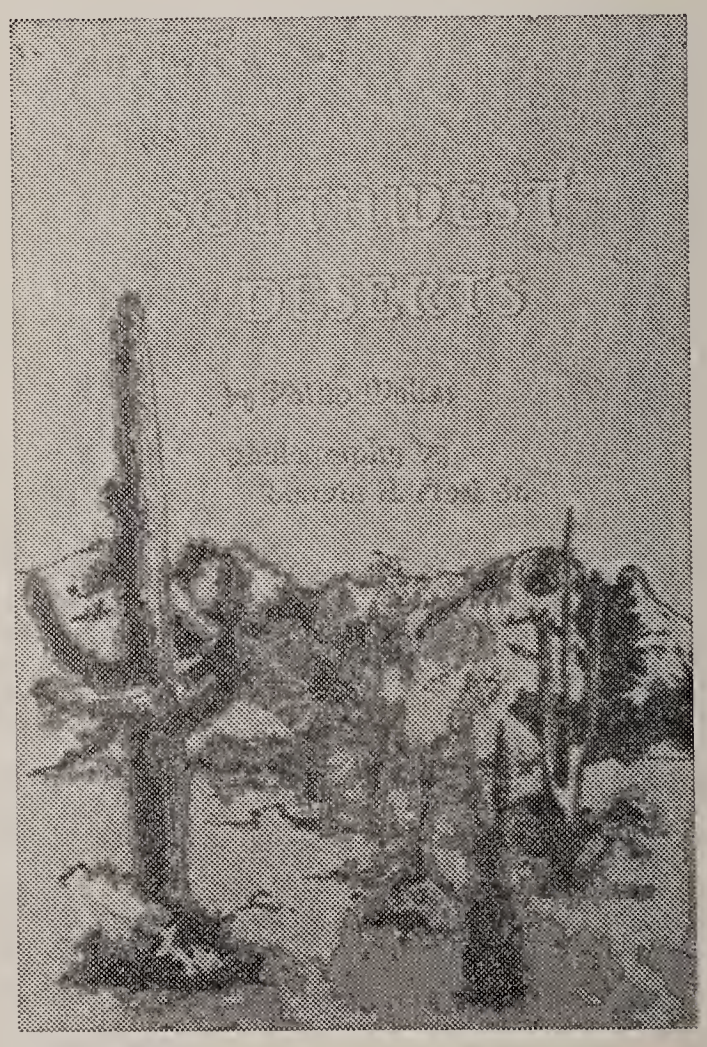
Phillip Welles, photographs by Marvin H. Frost, Sr., published by Dale King, Globe, Ariz., 86 pages, paper-bound, $1.15 postpaid Desert Botanical Garden, Tempe, Ariz.

There have been many books written about the southwest deserts and it is good to find a new book fresh with many excellent black and white photographs. It is an excellent 'starting' book to aid the newcomer in identification of some of the desert's flora and fauna.

The text of the book has several discrepancies but is quite readable and covers many species of cacti, shrubs, trees, lizards, snakes, animals, birds and insects.

The author states that this book is the first of a triad of 'once-over-lightly' books of introduction to the southwest. I hope that the specific names will be carried along with the generic names in the forthcoming books — 'Meet the Southwest Mesas' and 'Meet the Southwest Mountains'.

This is a good, inexpensive book



recommended for your family library and friends.

—W. H. E.

FRIJOLILLO
RATTLEWEED
CRAZY WEED
LOCO WEED
PEA FAMILY

Oxytropis lambertii Pursh

Leguminosae

Even as people often give their friends nicknames because of some outstanding peculiarity or characteristic, they also denote the plants with whom they live by local names descriptive of their habits or appearance or effect. And this is the case with the **frijolillo,** or little bean, so called after the bean-like seeds this herb produces. Its fruit is contained in swollen pods that allow the seeds to rattle against their interiors when they are shaken by even the slightest breezes, with the result that some English-speaking people have called it rattleweed. Their appelation

of crazy weed obviously is a direct translation of the Spanish word **loco,** meaning crazy, and is most suitably applied since stock that consume it when it grows in seleniferous soil develops glassy eyes, a slow and staggering gait and a generally unkempt appearance as if they had gone mad. Gradual emaciation sets in and the animal degenerates until it dies. It is said that stock familiar with the regions where it thrives will not touch it, but imported animals

are unsuspectingly drawn to its inviting leaves and flowers for forage, and that when once tasted it produces an insatiable desire for more. I am told that the antidote against its deadly poison is hot lard, and if the afflicted ones can be moved into uncontaminated region quickly enough, they may recover, especially with constant feeding of grain. However, the increasing paralysis it produces evidently causes abortion and sterility among the animals that have survived in spite of its toxins. It is also believed that when the flowering season is over, the plant is harmless and has no detrimental effects on the cattle and horses that eat it then.

Ethnobotanical excerpt from 'Healing Herbs of the Upper Rio Grande'—L.S.M. Curtin, Laboratory of Anthropology, Santa Fe, N. M.

PLANT OF THE MONTH

Carnegiea gigantea—Saguaro, Giant Cactus. This is Arizona's State Flower. The white, waxy, nocturnal blossoms remain open for a few daylight hours and are quite impressive on these solitary giants of the desert. The fruit ripens in late June at which time the Indians gather them to make conserve. The Saguaro is found in southern Arizona and south to Guaymas, Sonora, Mexico where it mingles with the Indian-comb giant — PACHYCEREUS PECTEN-ABORIGINUM

CHILOPSIS LINEARIS

DESERT WILLOW

BIGNONIACEAE (Catalpa Family)

John Weber, Horticulturist

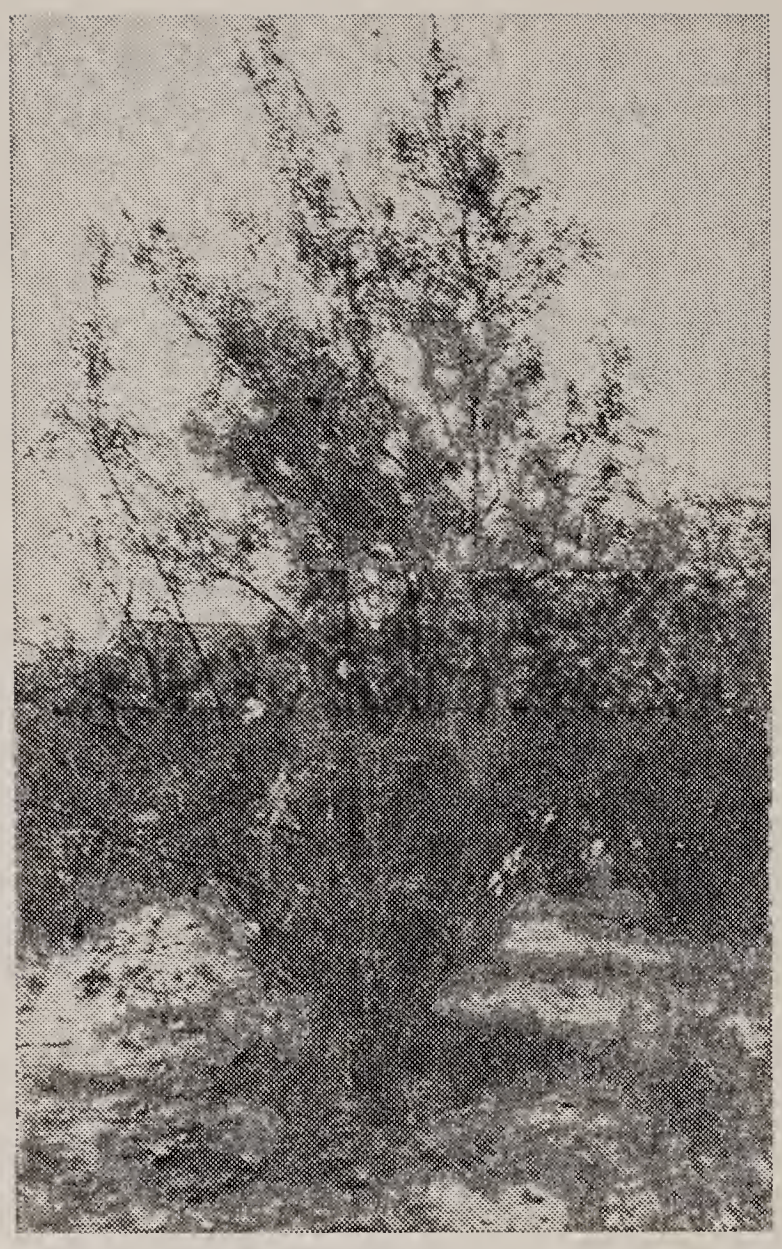
DESCRIPTION:

The desert willow grows as a large shrub or a small tree with a spreading crown and extends from eight feet to as much as thirty feet in height. Light green lance-shaped leaves with an alternate arrangement along the stems are deciduous during the winter months. These leaves are simple in form with entire margins not dentate and are straight or at times curved. Length of the leaf varies from three to six inches long and a width of less than three-eighths of an inch is the rule. Flowering from April through August ,the perfect catalpa-like flowers occur several in a cluster in short terminal racemes. The large, showy, tubular corollas are five lobed and from one to two inches long. Having a pleasant fragrance, the white flowers are tinted with purple, pink, or lilac with yellow streaks extending into the tube. Numerous seeds are contained within a long and very narrow pod which is as much as eight inches long and less than one-fourth inch in diameter. The seeds were light brown in color and are enclosed within two hairy wings. Dark brown ridged bark covers a soft brown wood streaked with yellow.

DISTRIBUTION:

In California CHILOPSIS ranges from coastal southern California eastward into the Mojave desert and to the north and west borders of the Salton Sea of the Colorado desert. It is found locally also in southern Nevada, southwestern Utah, New Mexico, south and southwestern Texas, and in Mexico in the states of Baja California, Sonora, Tamaulipas, Durango, and Zacatecas. From the Grand Canyon in Arizona it extends south through Mojave and Yuma counties and east through southern Coconino to Yavapai, Gila, Maricopa, Pima, Cochise, Greenlee, and Santa Cruz counties. On much of the Arizona desert it is the only common woody associate of HYMENOCLEA and BACCHARIS. Its lower elevational limit is about

Orchid-like blossoms of the Desert Willow, ½ X. Note the long narrow seed pods on the right of the blossoms.



An 8 year old Desert-Willow, 12' tall.

fifteen hundred feet; the upper being near six thousand feet. The desert willow, in fact not being a willow at all, occupies much the same type of microhabitat as do willows; seeking out moist situations along seeps and springs, washes, bottomlands, plains, mesas, and foothills.

UTILIZATION:

CHILOPSIS perhaps has its greatest value in its use as an ornamental tree. The large showy catalpa-like flowers borne throughout the summer months, create a display during a period when most other flowering trees have terminated their show. The extreme hardiness of the plant under cultivation makes it ideally suited to arid region landscaping. Other ornamental uses include screening and windshelter belts when used in mass and shading when used individually. CHILOPSIS placed strategically about a desert home serves as game cover, particularly for birds and small mammals. The deep tubular flowers are regularly visited by hummingbirds.

CULTURE:

Desert willow grows well on any exposure and thrives best in full sun. It is not selective as to soil, doing equally well on a rocky, well drained substrate, on light deep soils, or in sand and gravel. Normally the tree prefers a moist site and when planted in well drained soil it should receive deep biweekly irrigations during dry summer months.

PROPAGATION:

Seed can be collected whenever it is completely mature from October into the late winter months. Storage can be made in a cool dry place until spring when temperatures are sufficiently high enough to sow. Germination averages

A 10 month old Desert Willow, 12" tall.

about fifty-five percent and even with high temperatures requires from fifteen to thirty days. Dormancy does not exist, but presoaking overnight seems to aid in hastening germination. Any friable well drained soil will serve if kept moist during the premergence period. Growth rate the first year is moderate attaining fourteen inches in a container. The rate accelerates and becomes rapid after installation in the ground. The plant is also easily propagated from cuttings, and this method may be used when a large extent of screening or shelter belt planting is desired.

AVAILABILITY:

Desert willow can be obtained from most southwestern nurseries. These plants are container grown, being well established and ready for planting and are often in flower at time of purchase. Seeds are carried in stock by a few seed dealers that specialize in native desert plants.

REMARKS:

CHILOPSIS is normally unpalatable to livestock and heavy use is indicative of overgrazing. It has been used to some extent in erosion control and shelter belt planting.

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Bailey, L. H.—Standard Cyclopedia of Horticulture.

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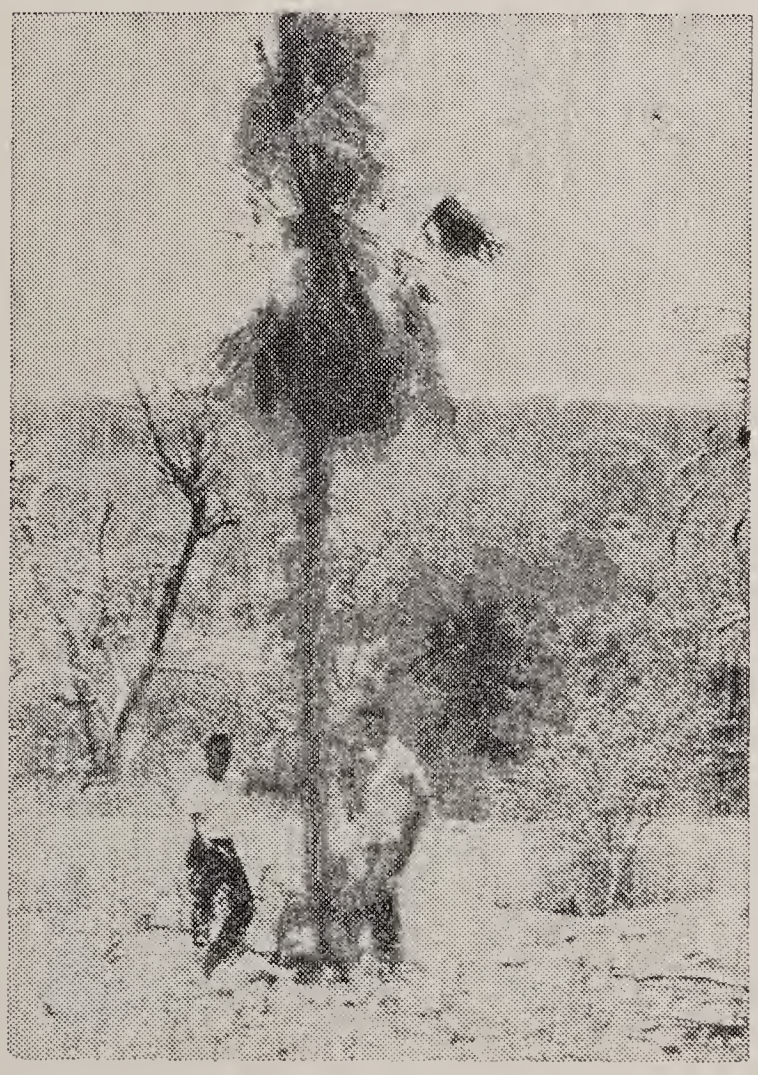
Woody Plant Seed Manual—Forest Service Misc. Pub. No. 654.

COLLECTING SEED IN MEXICO

Last January Board Member Charles Mieg spent sometime collecting plants and seed around Alamos, Sonora. Many of these seeds were then germinated at the Garden but it was found that the old seeds had lost their viability so another trip was planned to collect fresh seed.

In April Mr. Mieg with John Weber, our horticulturist, made a trip to Sonora and northern Sinaloa and found fresh seed of many trees and shrubs new to the Garden. They explored old roads and were able, after several narrow escapes, to drive about 30 miles east of Alamos on a narrow road, not shown on any maps, that used to be a burro trail but recently widened to bring logs down off the mountain.

This road uncovered areas not previously explored by plant collectors. Seeds were collected off a lovely small palm **Erythea aculeata** that will be an excellent plant for ornamental plantings. A century plant (Amole) **Agave mayoensis** was found growing on bare rocks and cliffs along with **Agave boui-**



EYRTHEA ACULEATA, John Weber & German Pablos in its scant shade.

AGAVE MAYOENSIS—growing in abundance on the hillsides.

cornuta, a handsome broad-leaf plant with prominent brown spines that will do justice to any century plant collection.

Many shrubs and trees had immature fruits so it was decided that the area should again be visited before the summer rains made the streams and back roads impassable.

On June 6th, J. Weber and your Editor, ladened with pails, boxes, cans and screens, travelled down to Sonora to reap a harvest. We were successful in getting seeds we needed of a golden Palo Verde **Cercidium sonorae,** they germinated in two days after we planted them at the Garden; **Lysiloma watsoni** a tall fern-like legume tree; **Acacia cymbispina** an unusual decorative shrub with broadly flaring thorns and many other plants too numerous to mention.

ACACIA CYMBISPINA—with its peculiar boat-shaped spines. Note the lack of foliage on many of the plants due to the Sonoran 'dry spring.'

Early June is a most interesting time to visit Sonora because of the "dry-spring". Nearly all the trees and shrubs are leafless due to the dryness yet at this time of the year many are in bloom and are bearing their fruit which will be matured when the summer rains deluge the Rio Mayo River basin in July. After the rains come the area is then impenetrable and resembles a jungle in that plants are not distinguishable.

Outstanding trees to see in bloom in June are **Guaiacum coulteri** covered with prussian-blue blossoms, **Acacia willardiana** with its white peeled bark and white blossoms, **Erythrina flabelliformis** (coral bean) trees up to 20' tall with clusters of scarlet red blossoms. Between Navajoa and Alamos can be seen **Cercidium sonorae** (golden palo verde) with large golden-yellow flowers, **Mascagnia macroptera** growing in clumps or up thru trees with clusters of yellow blossoms followed by crepe-paper-like winged fruit. An introduced vine of India **Cryptostigia grandiflora** has escaped from Alamos gardens and is choking the river bottoms with large white showy blossoms.

The barrancas above Alamos have many Kapok trees, **Ceiba acuminata** had large 8' white pods that were beginning to open and their white flowers were beginning to show, **Bombax palmeri mexicana**, also a Kapok, had large brown 8" pods hanging on horizontal branches. **Willardia mexicana** was just beginning to show its bright purple fragrant blossoms. The thick, naked stemmed **Plumeria mollis**, that resembles a rubber plant, were covered with large white, sweet-scented blossoms.

Our only disappointment was that the fruits of the "hechos" **Pachycereus pecten-aboriginum** (Indian comb cactus) and the "Pitahaya dulce" **Lemaireocereus thurberi** (Organ pipe cactus) would not be ripe until the end of June. German Pablos, Ciudad Obregon, who was on our staff until he graduated from Arizona State University in June, joined us in our trip to Alamos. We showed him how to extract the seed from the above cacti and he plans on collecting large amounts of seed and sending it to us in July.

We collected seed in quantities of **Rathbunia sonorensis** (Octopus cactus), **Lemaireocerus montanus** (Mountain

Two giants of the southern Sonoran Hillsides in fruit. PACHYCEREUS PECTEN-ABORIGINUM (Indian Comb Cactus) and LEMAIREOCEREUS MONTANUS (Mountain cereus) which is close to 60' tall.

cereus) and "pitahaya colorada" a hybrid **Lemaireocerus thurberi X Lemaireocerus montanus** which has large red-spined fruits.

The Rio Mayo country is a most fascinating collecting area and once a collector or botanist is 'bitten' he continually returns to its coastal plain, foothills, barrancas and plateau. One of the best books available, with detailed coverage of the region, is "Rio Mayo Plants" — Howard Scott Gentry. Published by the Carnegie Institution of Washington, Publication No. 527, Washington, D.C.

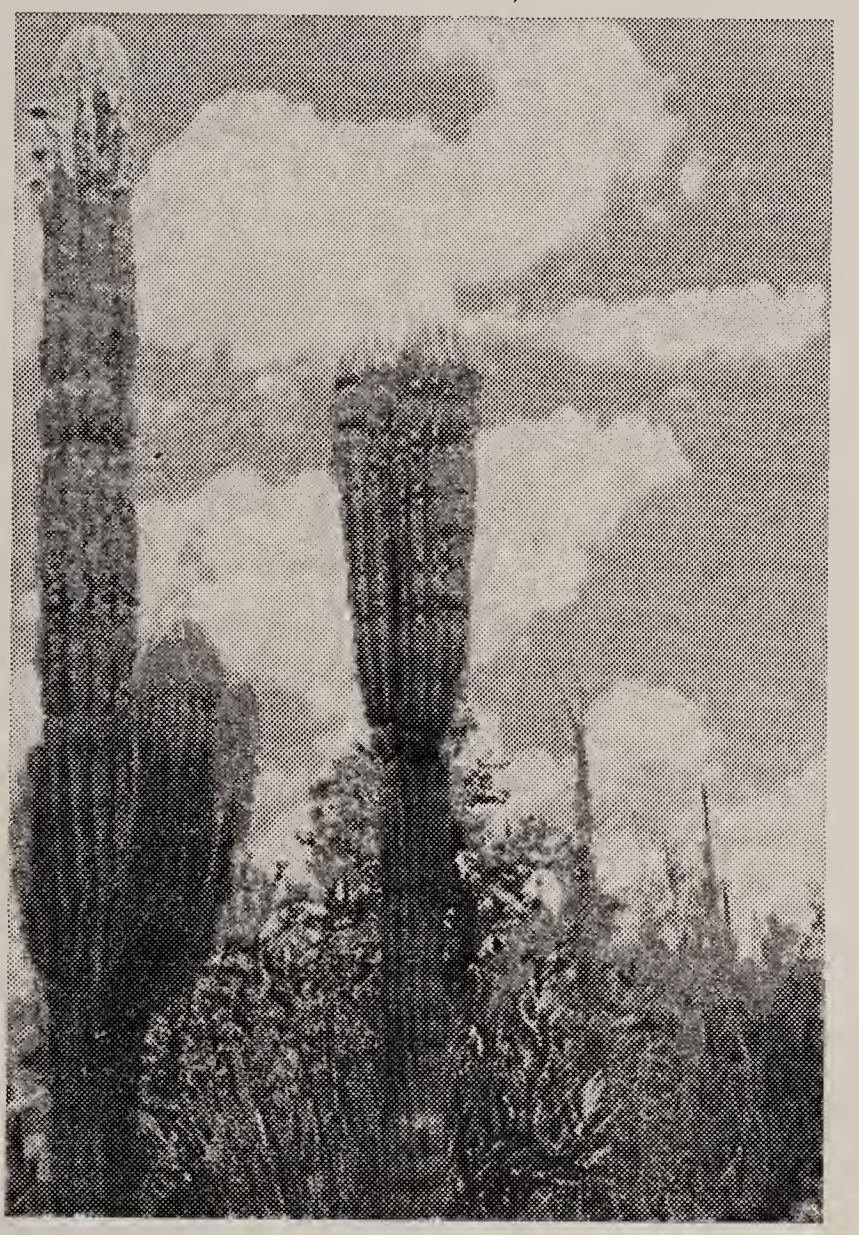
FORCHAMMERIA WATSONI (Palo jito) A dense, symmetrical, olive-like tree that belongs in the Caper family. It is found in the foothills near Bachoco, Sonora, growing with OLNEYA TESOTA (Desert Ironwood) and other thorny shrubs.

An unusual spreading LEMAIREOCEREUS THURBERI (Organ Pipe cactus) found on the Bachoco road. This cactus is about 25' wide and 12' high. Note the dryness of the vegetation.

SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

AUG.-SEPT., 1960



Pachycereus pringlei (S. Watson) Br. & R. 1909 "Cardon". A fast growing, frost tender cerei that does well in our Garden.

REG MANNING

SAGUAROLAND BULLETIN

Published and owned by the Arizona Cactus and Native Flora Society, sponsors of the Desert Botanical Garden of Arizona, P.O. Box 547, Tempe. Saguaroland Bulletin attempts to promote the Garden and to provide information on the desert plants and their culture. Subscription $5.00 per year, the subscription including active membership in the Society and the Desert Botanical Garden. Issued 10 times a year.

W. HUBERT EARLE, Editor

Volume 14 | Aug.-Sept., 1960 | No. 7

Arizona Cactus and Native Flora Society

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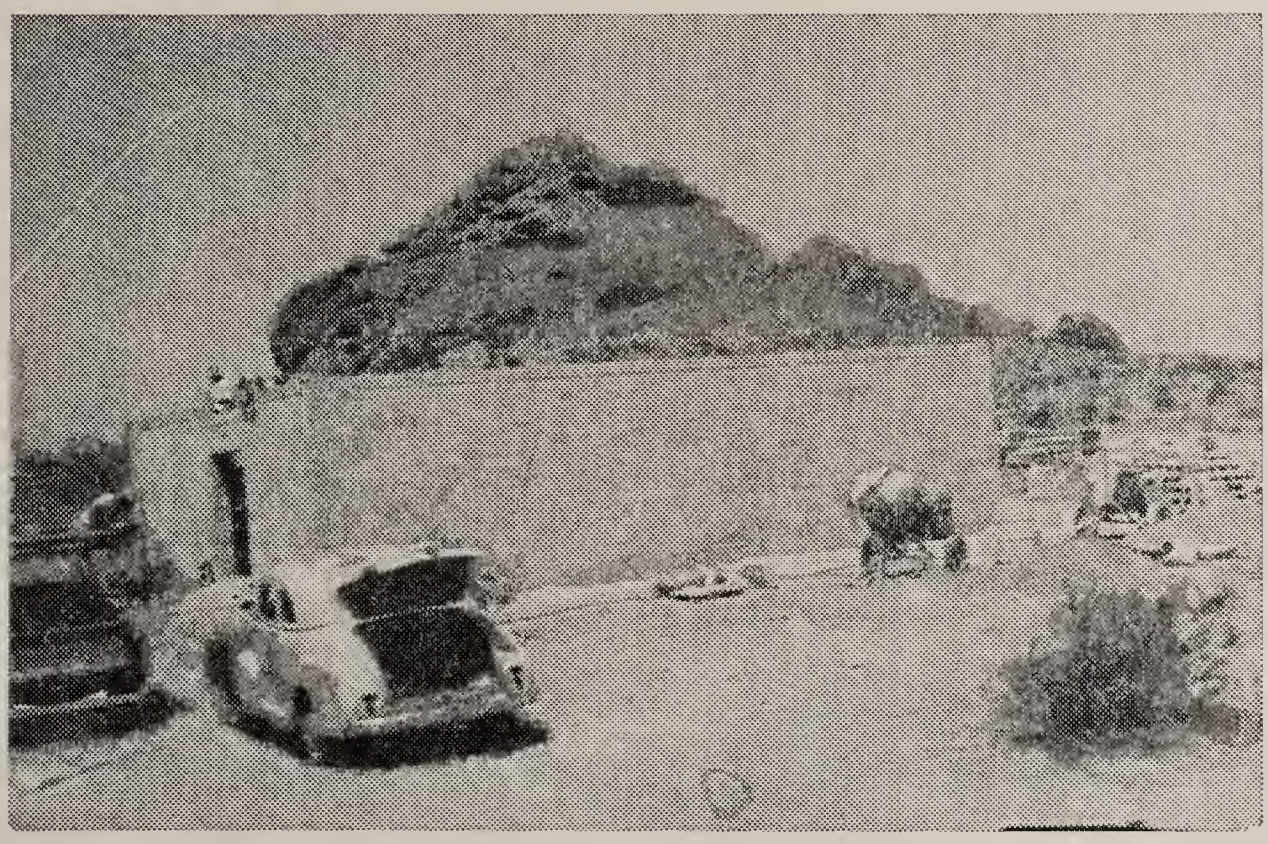
Garden Closed July and August for Improvements

VISITORS RECEPTION BUILDING PROGRESS

August — Cement being poured for porch and building floors.



September — Concrete blocks set up to roof level. Building should be completed about Oct. 1st.

LAWS TO PROTECT NATIVE PLANTS

It may be surprising to you to learn that each State in the Union has laws protecting its native plants. In states having verdant and abundant vegetation very little is ever thought of plant protection. Whereas we, in the southwestern states where vegetation is sparse, are much more conscious of plant laws to protect the existing plants.

The laws in each state are nearly identical but permission for removal of plants is controlled by either districts, counties or the State. Policing and enforcing the law can be by either law officers, employees of departments of Agriculture, Horticulture or Entomology or by 'citizen's arrest'. The removal of plants is prohibitive from State, Government, Indian Lands, National Parks & Monuments or National Forests.

We feel that you should be familiar with laws governing the 'Protection of Arizona Native Plants' which is as follows:- Chapter 49-Article 1, Section 49-401 to Section 49-409 Section 49-401. The following plants shall constitute the protected group, and the botanical names shall govern in all cases: 1. All species of the following families: polypodiaceae (fern family); liliaceae (lily family); iridaceae (iris family); amaryllidaceae (amaryllis family); orchidaceae (orchid family); crassulaceae (orpine family); saxifragaceae (saxifrage All species of the following genera: aquilegia (Columbine); lobelia (lobelia); dolecatheon (shooting star); primula (primrose); foquieria (ocotillo); Washingtonia (fan palm); 3. The following species: gilia aggregata (scarlet gilia); atriplex hymenelytra (desert holly); cercis occidentalis (western red-bud); parosela spinosa (smoke tree); holacantha emoryi (crucifixtion thorn); fremontia californica (flannel bush). All plants growing within two hundred yards of any highway.

Section 49-402. (a) Except as in this act provided, no person shall destroy, mutilate, or remove or employ any person to destroy, mutilate, or remove, any living plant except seeds, of the protected group from any public, state, or private land without first obtaining a written permit from the owner, except as to private lands, and the approval upon the said permit of the Arizona Commission of Agriculture and Horticulture and filing a verified copy thereof with the county recorder of the county wherein said plants grow.

Portion cut out of center of a barrel cactus to make candy.

(b) The Arizona Commission of Agriculture and Horticulture may permit, in writing, a person to take a definite number of specified plants in the protected group, from areas specified by the Commission, for scientific or educational purposes.

(c) No permit as provided by subsections (a) and (b) shall be issued for more than one shipment of plants nor good for more than thirty days.

(d) The Arizona Commission of Agriculture and Horticulture may permit, in writing, the removal by the permittee of leaves of the Yucca Bacatta or Yucca Elata, or both, for the obtaining of the fibre therefrom for commercial purpos-

es. Such permits shall only be issued to persons maintaining within the State of Arizona plants for the manufacture of Yucca fibre. The commission shall prescribe the compensation to be paid to the state for leaves taken from state lands, and no removal of leaves shall be permitted within 200 yards of any state highway.

(e) Nothing herein shall be construed to prevent the clearing, cleaning, or removal of plants from any canal, lateral, ditch, survey line or public road or highway when necessary to the full and proper use thereof, or land being cleared for homes or for agricultural purposes by the owners of said land; nor to prohibit the use of dead cacti for business or other purposes.

Section 49-403. The Arizona Commission of Agriculture and Horticulture shall collect a fee of five dollars for each permit issued, except permits for scientific or educational purposes.

Section 49-404. No person or common carrier shall transport any plant, or any part thereof, belonging to the protected group, nor receive or posses the same for transportation within or without the state, unless the person offering the same for shipment exhibits to the person or to the common carrier a valid, written permit for the taking of said plant or part thereof, and has securely attached thereto a valid shipping permit issued by the commission, or a coupon detached from such permit, and if for transport without the state, must also bear a certificate of inspection by the Commission of Agriculture and Horticulture.

Section 49-405. The Arizona Commission of Agriculture and Horticulture is empowered to issue permits for the transportation of plants belonging to the protected group, to points within or without the state, and to make all necessary rules and regulations not in conflict with this act, for the enforcement of the provisions thereof.

Section 49-406. Any peace officer or any officer or employee of the Arizona Commission of Agriculture and Horticulture shall have power, in the enforcement of this act, to make arrest without warrant for any violation of this law which he may witness, and to confiscate any plants or parts thereof belonging to the protected group, unlawfullyl cut or removed.

Top of small Saguaro wantonly mutilated.

Section 49-407. The board of supervisors of each county is authorized to adopt and enforce ordinances, not in conflict with law, for the preservation of plants.

Section 49-408. Any person violating the provisions hereof shall be guilty of a misdemeanor and fined not more than three hundred dollars, and each violation shall constitute a separate offense.

Section 49-409. If any section or part of this act shall be declared unconstitutional, the validity of the remainder of the act, if susceptible of enforcement, shall not be affected thereby. The legislature declares it would have passed the said act, irrespective of the section or part held to be void.

PLANT OF THE MONTH

Ferocactus wislizenii — Compass barrel, candy barrel. This late flowering barrel cactus of southern Arizona, northern Mexico and southern New Mexico is quite colorful with its yellow to red blossoms. The apex of the plants slants to the south or southwest and gives the desert traveller a rough compass bearing. The pulp of the plant is used in the making of an inexpensive cactus candy.

TECOMA STANS
(var. angustata)

BIGNONIASEAE
(Bignonia family)

TRUMPET BUSH

John Weber, Horticulturist

Description:

In form the yellow bush trumpet makes an open upright shrub or low bush. In the northernmost reaches of its range it grows from three to six feet in height, but under optimum conditions in the southern extensions it attains a height of eight feet. Bright green lanceolate leaflets are opposed in arrangement and deciduous during the winter months. The leaves are pinnate, having from seven to eleven serrate leaflets. Length of a leaflet varies from one to three inches long, with a width of one half inch or less. Flowering almost continuously through the summer months, the yellow campanulate flowers are arranged in a loose open inflorescence. A funnel-form corolla two and a half inches long has a short tube, expanding throat, and five irregular lobes. No marked fragrance is apparent in the clear butter yellow flowers, but they do attract hummingbrids as well as desert crested iguanas, that are vegetarian in food habit. The membranous winged seeds are contained in three inch long pods. These seeds are flat and many are found to be unfilled and non-viable.

A 4' tall Trumpet bush.

Distribution:

Yellow trumpet bush is found in the trans-pecos area of southwestern Texas, the Dona Ana mountains of New Mexico, northern Mexico, and in southern Arizona. From the Pinal montains in Pinal county it extends into eastern Pima, Cochise, and Santa Cruz counties of Arizona. Tecoma is frequently found in association with **LARREA** (creosote bush), **FLOURENSIA** (tar bush), and **PROSOPIS** (mesquite). Ranging in elevation from three thousand to fifty five hundred feet, it extends from high desert through the desert grassland to the lower oak woodland; occupying dry rocky hills and sandy gravelly plains.

Utilization:

For landscaping purposes, Tecoma can be used individually as a foundation plant or for maximum effect as a specimen shrub. When planted alone in a protected location, it repays effort and patience with an extended period of profuse flowering. As aforementioned, hummingbirds make frequent visitations to this plant.

Culture:

Bush trumpet will grow best in full sun or partial shade on a south or east exposure. Being tender in colder areas, a site against a wall with early morning winter sun would be required. A light well drained soil will serve well if covered with a manure mulch during the summer months. In areas having high temperatures, biweekly irrigations would be necessary.

Propagation:

Propagation can be made by seed or by cuttings. Careful selection will eliminate most unfilled non-viable seeds. Initial growth rate is slow, but increases with second year growth.

Availability:

Tecoma stans is found in the trade in several southwestern states, but it is doubted that the variety angustata can be so found. The angustata variety is hardier than the species, being able to withstand lower relative humidity conditions.

A 2-month old Trumpet-bush seedling — 10" tall.

Yellow trumpet-like flowers last for several days.

Remarks:

Tecoma is rated as having no browse value, however, it is stated in Arizona Flora that bighorn sheep are known to forage on it. In Mexico the roots of this plant are reported to be used medicinally and for making an alcoholic beverage.

References:

Bailey L. H. — Standard Cyclopedia of Horticulture.

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Kearney & Peebles — Arizona Flora.

GARBANCILLO
PATITA DE LA PALOMA
LUPINE
QUAKER BONNETS
PEA FAMILY

Lupinus aduncus Greene

Leguminosae

In general, the Spanish New Mexicans have selected this lupine's pea-like appearance for identifying it as **garbancillo,** little pea, but the inhabitants of Canada de los Alamos evidently feel differently about the matter for they call it **patita de la paloma,** because the leaves resemble a wild dove's claws. Perhaps if they had ever seen a Quaker bonnet, they might also have been struck by the similarity of its blossoms with these charming caps.

According to Charles Darwin ("Movements of Plants", p. 340), the leaves of the lupine are remarkable for "sleeping" in three different ways: from being in the form of a horizontal star by day, the leaflets either fall and form a hollow cone with their bases upwards, or rise, and the cone is inverted, or the shorter leaflets fall and the longer rise; the object in every case is to protect their surfaces from radiation and wetting wtih dew.

For nearly twenty centuries the word lupine has preserved its Latin designation, **Lupinus,** without any modification, excepting the abandonment in English of the last syllable. There is the legend that Plutarch lived upon lupine, undoubtedly the variety **Lupinus albus,** and for many years Roman actors paid their imaginary debts upon the state in lupine seeds, for their round and flat shape mimicked true coins.

The Romans too introduced lupine into Great Britain and found it included in a composite remedy from the Leech Book of Bald, the earliest medicinal Anglo-Saxon manuscript in our possession; that even had the Romans failed to import it into England, it must have been there from very early times.

A branch of the Lupinus aduncus in flower.

These are the directions given by the manuscript: "A light drink for the wood-heart lupin, bishopwort, enchanter's night-shade, heneium, crop-leek, hindheel. Take these worts when day and night divide; sing first in church a titany and a credo, and a paternoster; with the song go to the worts, go thrice around them before thou touch them, and go again to church, sing twelve masses over the worts". Furthermore, "The Historie of Plantes", our sixteenth-century friend, tell us that during those days, "the flower or meale of Lupine, with vinegar or boyled in

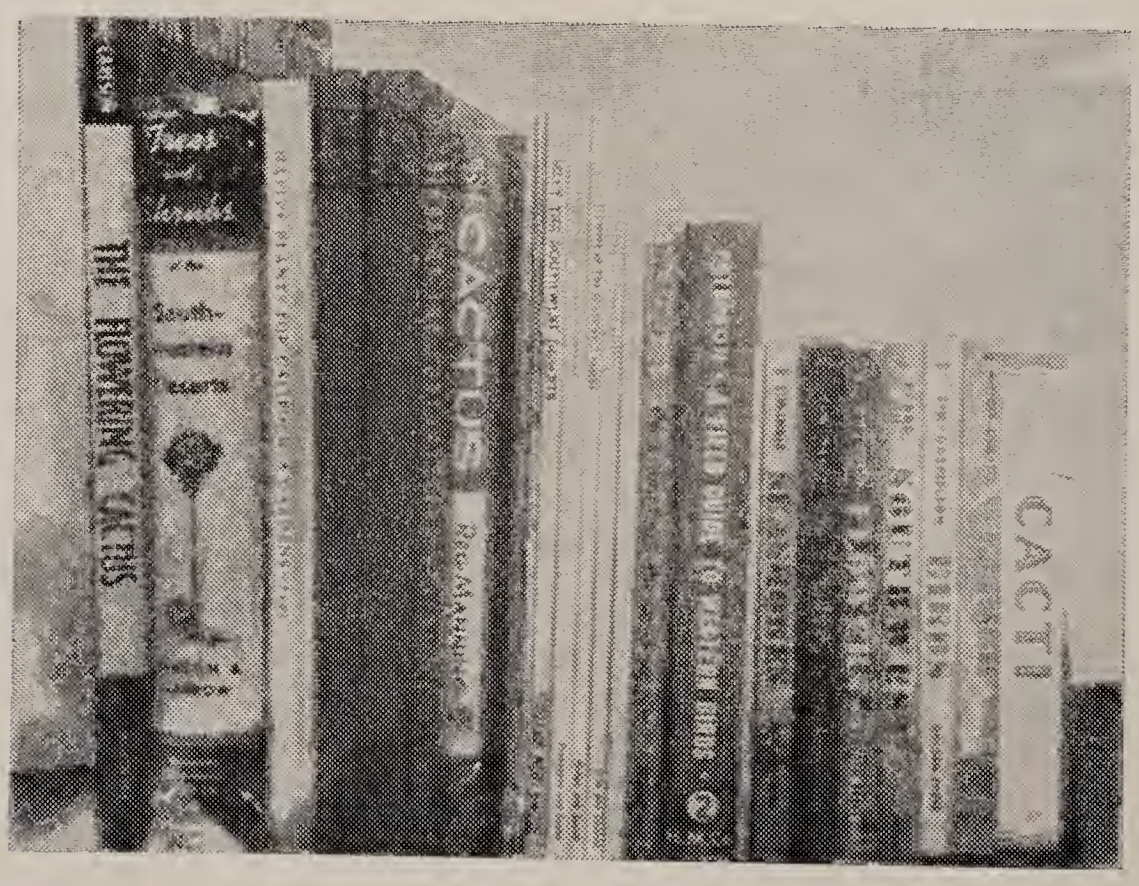
vinegar, swayeht the payne of the Sciatice, it digesteth, consumeth, dissolveth the kings evil, or swelling in the throat, it openeth and bursteth wennes, botches, boyles and pestilential or plague sores".'

Perhaps it was from the Mediterranean that the people of Prado, New Mexico, inherited their cure for running sores on children's faces. The diseased parts are bathed with a tea made from the leaves; and this is followed by an application of pulverized, dry leaves. When this has been done, a dose of castor oil is administered.

In certain districts, the **Astagraglus dipsysus Gray,** a kind of loco weed, is called **garbancilo,** and although the lulupine does contain some poison and belongs to the same family as the loco weeds, it should not be confused on this account with the other species which is an entirely different pant.

Ethnobotanical excerpt from 'Healing Herbs of the Upper Rio Grande'—L.S.M. Curtin Laboratory of Anthropology, Santa Fe, N. M.

Desert lupine—Lupinus sparsiflorus in flower.



A few of the books now available in our Bookstore. Write for the new price list which will be available Oct. 1st.

FRESH CACTUS SEED

The Garden has collected an abundance of seed this past spring and summer for distribution amongst botanical gardens over the world. We anticipate a surplus of seed and offer them to you as follows:-

ARIZONA GIANT SAGUARO (Carnegiea gigantea)
Packet — 50c 1 oz. — $2.00 ½ lb. — $12.00 1 lb. — $20.00

ARIZONA CANDY BARREL (Ferocactus wislizenii)
Packet — 50c 1 oz. — $2.00 ½ lb. — $12:00 1 lb. — $20.00

STRAWBERRY HEDGEHOG (Echinocereus engelmannii)
Packet — 50c 1 oz. — $4.00

INDIAN-COMB CEREUS (Pachycereus pecten-aboriginum)
Packet — 50c 1 oz. — $4.00

MOUNTAIN CEREUS (Lemaireocerus montanus)
Packet — 50c 1 oz. — $4.00

ARIZONA QUEEN OF THE NIGHT (Peniocereus greggii)
Packet — 50c

FENDLER'S ROBUST HEDGEHOG (Echinocereus fendleri var. robustus)
Packet — 50c 1 oz. — $4.00

CLIMBING NIGHT CEREUS (Eriocereus pomensis)
Packet — 50c 1 oz. — $4.00

There are about 120-350 seeds, depending upon the species, in a packet or 5,400 to 11,000 in an ounce. The seeds are well cleaned and germination is between 90% and 98% under fair germination conditions. It may be of interest to you that all monies collected on the sales of seeds goes to our building fund. Evidence of past success is shown on page 75.

THE DESERT

O! The desert is fearsome, stale and hot
Blistering sands,
Burned rocks,
Tortured trees,
A fierce, fiery furnace, where life is not.
No bird or beast,
Dwells in this dreary waste,
But every living thing, in haste,
Even man, the lord of creation,
Flees the desert's bounds,
Else, leaves his bones to whiten on the ground
Truly, the land that Mother Nature forgot.
But when my magic waters,
By skillful hand is lead,
And my soothing coolness,
O'er the land is spread,
To comfort and to bless —
Ah!. 'tis no more a wilderness.
Now, the planted seed,
To quick maturity springs,
For the smiling sun,
Most potent rays, he brings.
Trees, fruits, and flowers,
In keenest rivalry strive,
To see which one, the most may give.
While lowing herds on every hand,
Add their wealth to the favored land,
To the southern valleys, the good earth,
My living waters give a new birth.
Sweet waters I bring, two thousand miles
To turn the parched land, to Nature's smiles.
Here many fair cities dwell,
Where once was only a desert hell.

—by Joseph W. Shirley

Ed: note: Mr. J. Shirley, now 86 years of age, retired from the National Park service several years ago after serving many years in Arizona. He now resides in Yuma. This verse is taken from his booklet "Arizona Poems" which has 25 other poems and can be obtained from the Garden at .75 each.

SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

OCTOBER, 1960

NYCTOCEREUS QUATEMALENSIS

Collected and flowered by the late Howard Gates.

The Garden now has a good display of night-blooming cerei which will continue until December.

REG MANNING

SAGUAROLAND BULLETIN

Published and owned by the Arizona Cactus and Native Flora Society, sponsors of the Desert Botanical Garden of Arizona, P.O. Box 547, Tempe. Saguaroland Bulletin attempts to promote the Garden and to provide information on the desert plants and their culture. Subscription $5.00 per year, the subscription including active membership in the Society and the Desert Botanical Garden. Issued 10 times a year.

W. HUBERT EARLE, Editor

Volume 14 October, 1960 No. 8

Arizona Cactus and Native Flora Society

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Desert Botanical Garden of Arizona

STAFF

Director ..... W. Hubert Earle
Consulting Botanist ..... James A. McCleary, Ph. D.
Horticulturist ..... John H. Weber
Maintenance & Bookstore ..... Wm. C. Hendrix
Bookstore ..... June T. Hendrix
Student Horticulturist ..... Demitrios Vlachos
Student Horticulturist ..... Robert J. Rousseau

Mr. and Mrs. Ed. Jones have returned to Iowa. They have been replaced by Mr. and Mrs. Wm. Hendrix who are real fine folks. Stop at the Garden and make their acquaintance.

GARDEN OPEN DAILY 9 A.M.—5 P.M.
Including Week-ends and Holidays

VISITORS BUILDING—OCTOBER 1st

We are proud of this new building. Landscaping is now in progress and occupancy may be about October 16th. Electrical and plumbing fixtures along with cabinets and sales counters are now being installed.

A portion of a new service road running along the east side of the Auditorium to the old parking lot.

GUACO
STINK WEED
ROCKY MOUNTAIN BEE PLANT
CAPER FAMILY

Cleome serrulata Pursh

Capparidaceae

The familiar **guaco** that fringes so many roadsides with its white and orchid pattern, contains a large supply of nectar — hence its name of bee plant.

Iron always has been a favorite medicine for anaemia; and locally, a piece of rusty iron is boiled in water with the flowers. The decoction is strained, and the dose is one glassful drunk cold.

The people of Agua Fria have a somewhat different remedy for stomach difficulties: the leaves are plucked very

A 1" branch of Cleome serrulata with its carper-like fruit. Ranges from Saskatchewan to Kansas, Arizona and Oregon.

Purple flowering head of Cleome serrulate. Note the long spider-like stamens.

cautiously, care being taken not to crush them. They are boiled in just enough water so as not to be too dry. A handful of corn and three cloves are put in a bag and boiled with the above preparation for three hours, when the sack is removed. The corn takes away the bitter taste, and the leaves can be eaten as greens with remedial results. And for **torson en las tripas** (gripes in the intestines), another method is employed: one part of **guaco** leaves is added to one part of **anil de muerto** (goldweed), and both are mashed together and mixed with hot weather. The resultant liquid is strained, and the decoction drunk.

I was informed at Ciruela that if the leaves are crushed and placed on the swellings, they will reduce inflamation caused by the bites of all poisonous insects.

But to the Spanish - Americans, the stinkweed, as the bee plant is commonly called because of the skunk-like odor it exudes, aside from its usefulness in stomach complaints and insect bites, has, in history, served its greatest purpose. A generation ago, the native New Mexican would under no circumstances destroy the weed — remembering well the story of the great drought in which his ancestors would have starved had they not resorted to **tortillas** made from the ground seeds of this plant. Although far from palatable, these seeds are nourishing, and they saved a great many lives during the distress.

The Tewa, Zuni and San Ildefonso Pueblo Indians have all found that they can make a black pottery paint from **guaco.** Although the coloration is obtained by extensive boiling, the Zuni, in contradiction to the Tewa who use the entire herb, do not decoct the root as well. **Guaco** paint produces the dull designs on polished ware from San Ildefonso.

Flies evidently are particularly attracted to this plant while it is still moist, and consequently, great care is taken to prevent their walking on the earthware while it is being decorated.

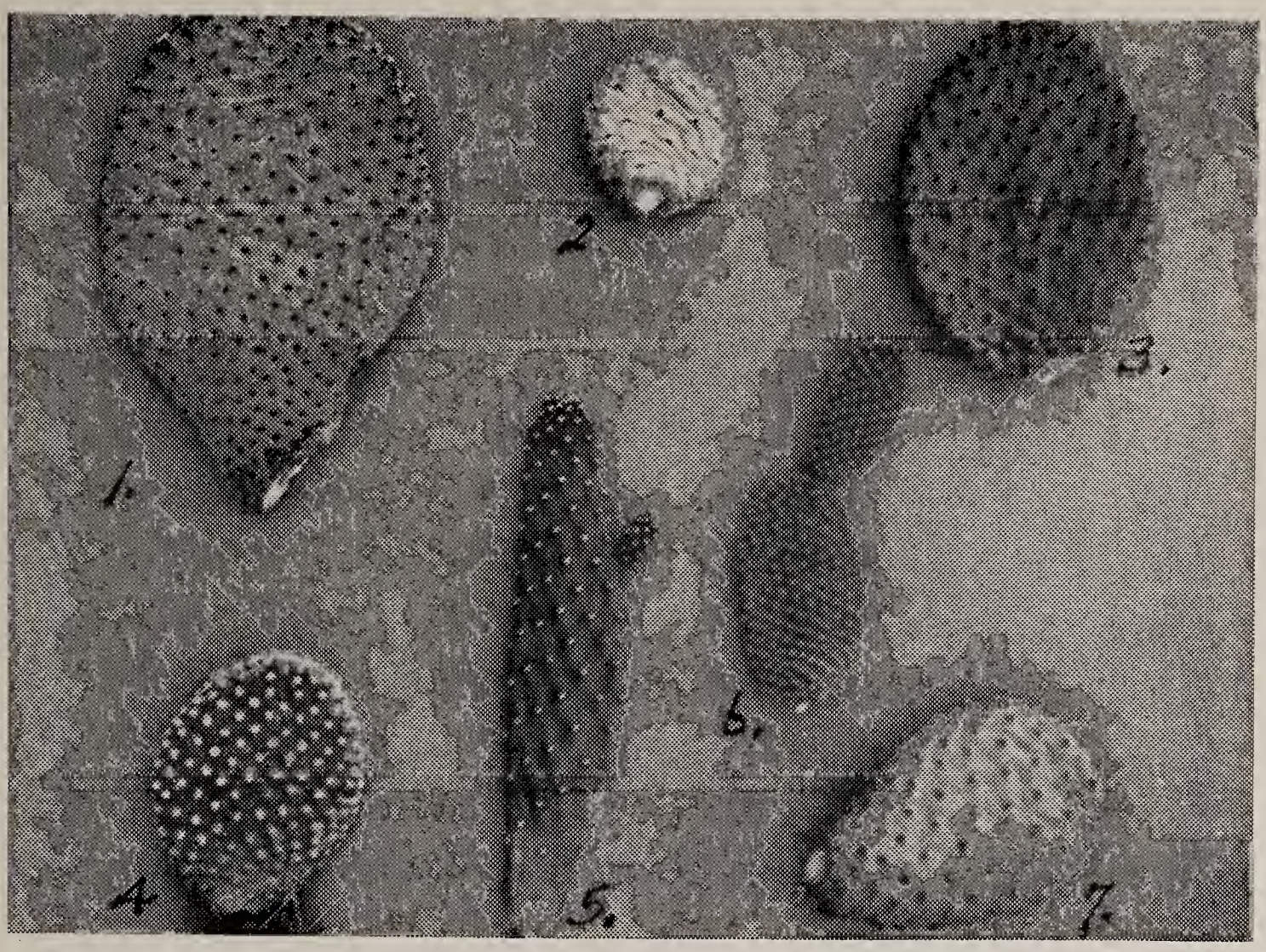
This thick fluid may be dried n the sun and kept for an indefinite period. After soaking some of it in hot water, Tewa Indians fry it with grease as a great table delicacy. **Guaco** greens as well may be dried for winter storage if gathered in early summer before the stalks have grown more than about eight inches. These are to be stripped and the slender leaves left in the sun. This method is common particularly among the Keres people. During the process of cooking, the water must be changed several times; and when served, the dish is to be preferred to canned spinach. The Zuni Indians also cook the tender leaves, usually with corn, and eat them with a generous amount of **chile.**

Ethnobotanical excerpt from 'Healing Herbs of the Upper Rio Grande'—L.S.M. Curtin, Laboratory of Anthropology, Santa Fe, N.M.

Cleome lutea—A yellow flowering plant called 'spider-flower' that ranges from Nebraska to Washington south to New Mexico, Arizona and eastern California.

PLANT OF THE MONTH

ECHINOCEREUS ENNEACANTHUS (Texas Strawberry Hedgehog). This easy to grow and prolific blooming hedgehog ranges from eastern New Mexico thru southern Texas and down to Chihuahua, Mexico. The plant makes large mounds 3 feet in diameter and is covered with blossoms from April to June.



1. Opuntia basilaris (Beaver Tail): Arizona, California, Nevada, Utah and northern Mexico.
2. Opuntia whitneyana (Dollar Cactus): California.
3. Opuntia rufida (Blind Prickly Pear) Texas, northern Mexico.
. Opuntia microdasys var. albata (Angel wings): Mexico.
5. Opuntia schickendantzii (Donkey ear): Argentina.
6. Opuntia mcirodasys (Rabbit ear): Texas.
7. Opuntia aurea (Chain cactus): Arizona.

Many times we hear persons, while walking thru the Garden, refer to all of the above plants as 'Beaver-tail Cactus'. It seems that if a prickly pear has a velvety 'feel' (heaven help those who feel the plants) that it is a beaver-tail cactus. *Opuntia basilaris* is the only one of the plants that has a beaver tail-like pad or stem. All of the other plants have pads of various shapes and indented or slightly raised areoles. From these areoles arise the short barbed glochids that are so irritating to a person's skin.

These plants propagate readily from single pads as shown above. The cut portion of the pad, when dried, can be placed in the ground or the edge of the pad may be placed in the ground with the cut portion out of the ground. New roots will appear along the edge of the pads coming from the areoles.

RHUS TRILOBATA

ANACARDIASEAE (SUMAC FAMILY)

LEMONADE SUMAC

John Weber, Horticulturist

RHUS TRILOBATA bush, 8 feet wide and 8 feet high.

DESCRIPTION:

A decidious shrub that grows up to six feet in height and nearly as much in width. Aromatic foliage consists of caorsely crenate compounded leaves with an alternate arrangement along the stems. This is a polymorphic species. the stems. This is a polymorphic species, Arizona having six different varieties within its boundaries. Flowering from March to June, the yellow flowers occur in a dense spike-like inflorescence. The bright-red fruit is a small one-seeded drupe that is thin fleshed and acidic. It is subglobose in shape and one fourth of an inch across. Ripening in August; the hairy fruit, in red clusters, becomes very ornate.

DISTRIBUTION:

In Arizona the 'lemonade sumac' is found throughout the state at elevations from 2500 ft. to 8000 ft. It is common on dry rocky hillsides and in canyons; particularly where decomposed granite soils are within the elevation limits. Plants in common associaton with **Rhus trilobata** are: **Quercus turbinella** (scrub oak), **Cercocarpus sp.** (Mountain mohogany), and **Ceanothus greggii** (Desert ceanothus). The geographical distribution extends from Alberta and Saskatchewan in the North, and Missouri and Illinois in the East, through the western states south into Mexico. In Texas the species is found in the Edwards plateau, Trans-Pecos, and parts of the Prairie and Plains areas.

UTILIZATION:

'Lemonade sumac' having bright-green leafy foliage tends to soften the harsh aspect created by so many of the plants in a desert garden. It can be utilized as a basic foundation plant adjacent to a structure or individually

A 6" stem showing the single and compound, crenate leaves of Rhus trilobata. The stems and leaves are finely pubescent.

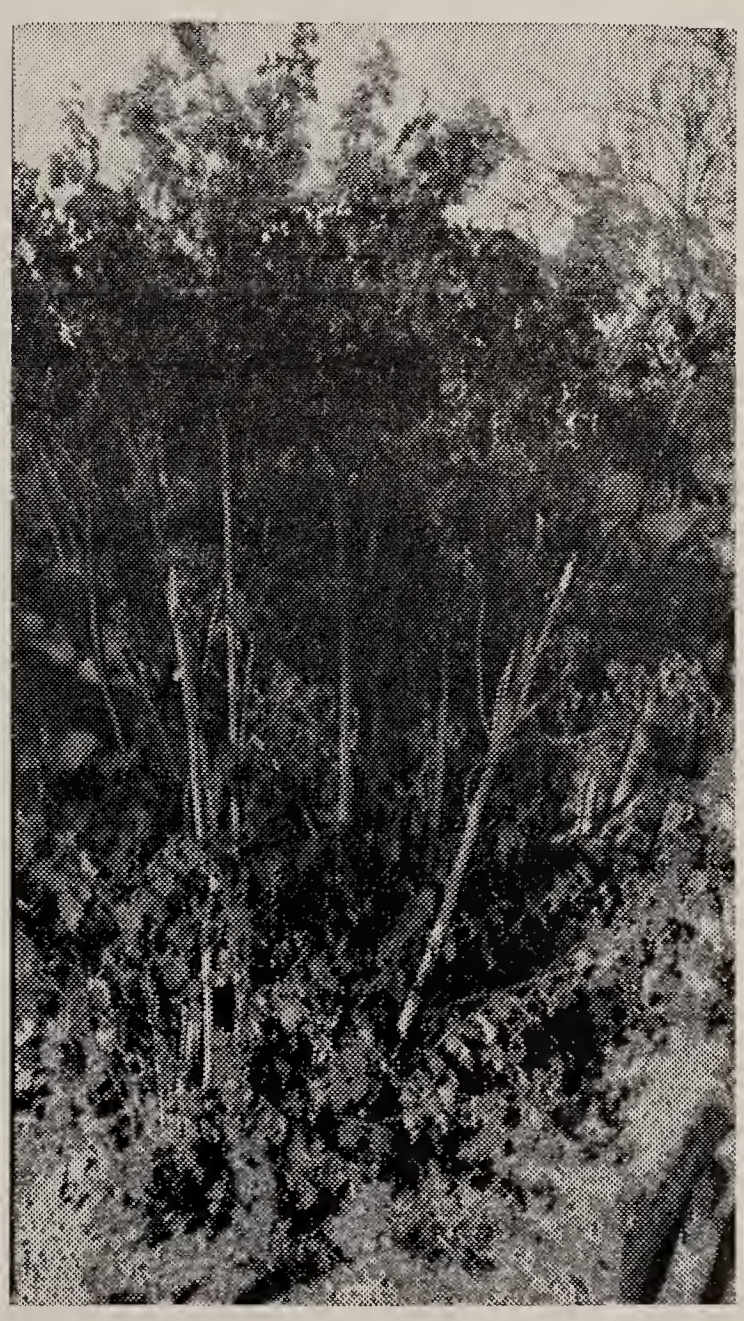
and in composite groupings. In an individual arrangement it can provide shade for small globose cacti and tender leaf and stem succulents during the summer. Being deciduous, the plant allows the under-story planting full sun during the winter months. In fruit, the plant attracts many birds and small mammals for observation.

CULTURE:

Rhus trilobata requires full sun and a well drained soil for normal growth. It is capable of withstanding extended dry periods in spite of its broad leaf form. Most of its annual growth occurs in the spring months and bimonthly irrigation during this season would add maximum growth. Fertilization is unnecessary and the plant is generally free of disease and insect pests. The final requirement is spatial; adequate room being necessary for normal growth.

PROPAGATION:

'Lemonade-sumac' can be propagated by several methods, these being root cuttings, layering, mature wood cuttings, and by seed. The seed has both embryonic dormancy and an impervious coat, rendering pretreatment necessary. Embryonic dormancy can be overcome by stratification of the seed in moist sand for 120 days at a temprelature of 40 degrees Farenheit. Soaking the seed in sulphuric acid from one to three hours or scarification of the seed coat eliminates the impermeable problem. When the pretreated seed is sown in the spring months, germination begins in ten days



Rhus trilobata showing new growth at tips after being severely trimmed in the spring.

and is usually finished by the thirtieth day. If seed is sown in the ground in nursery rows, it should be set at a depth of one half inch and at a density of 25 seed to a foot. Seedlings are susceptable to damp-off so that careful control of watering must be maintained and sterile methods should be practiced.

AVAILABILITY:

Rhus trilobata is not known to be in the trade, however, some of the nurseries specializing in desert plants may carry it in stock.

REMARKS:

Palatability of **Rhus** for livestock is slight to good and the nutritive value is low. It is little used by cattle and deer. As forage its greatest value is in southern Arizona and perhaps in southwestern Colorado. The plant does provide protective cover and food as fruit for birds and small wildlife. Utilization of **Rhus** for shelterbelt and erosion control planting has been made and the date of its earliest known cultivation is 1877. The name 'lemonade-sumac' is derived from the use of the fruit in making a beverage similar in taste to lemonade. Indians are known to have used the pliable stems in backet making and the berries for food and as a dye mordant.

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Dayton, W. A. — Important Western Browse Plants.
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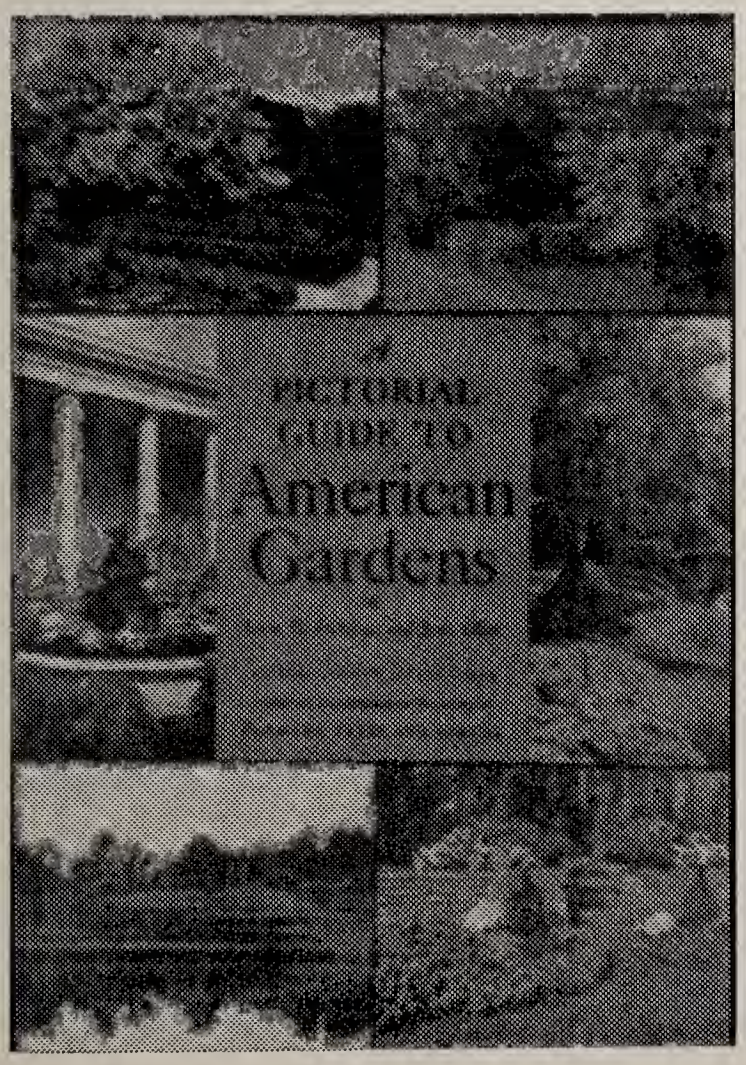
Woody Plant Seed Manual — Forest Service Misc. Pub. No. 654.

Rhus radicans—Poison-Ivy, Poison-oak. Note the white berries at base of leaf stems.

Rhus glabra—Scarlet Sumac. This plant's bright red leaves gives a touch of color to the forest in the fall.

Professor K. C. Mortensen, Arizona State University, with one of his 8 A. M. classes making a 2 hour tour of the Garden. Many schools and other groups have already made reservations for trips thru the Garden. September attendance was 50% greater than last year's.

BOOK REVIEW



"A New Pictorial Guide to American Gardens"—Louis H. Frohman and Jean Eliot. Crown Publishers, 400 illustrations, 90 in full color, 370 pages, cloth. $6.20 postpaid. Desert Botanical Garden Bookstore.

This is a fine book to use on tours of the United States. This book is arranged in regions and States. Private Gardens, city gardens and Botanical Gardens are all indexed along with an alphabetical directory of trees, flowers and shrubs.

Admission charges, if any, are listed along with visiting hours. Highlights of each garden are listed. This is indeed a fine book for the travelling gardner and flower enthusiast.—WHE.

THE SAGUARO

On the Desert, far out west,
Where the mountains and desert meet,
The giant saguaro grows best,
At the elevation of three thousand feet,
As the years go by so very fleet
During a long century, may
Point an admonishing finger to the sky.
It wears an armour of thorns, but there
The desert birds are free from care,
And boldly scoop them out a nest,
In the saguaro's soft yielding breast.
In the spring time of year,
A crown of blooms it is wont to wear.
It grows within Arizona's bound
Nowhere else may it be found.

—by Joseph W. Shirley.

SCHEDULE OF EVENTS FOR OCTOBER

Oct. 4—CACTOMANIAC MEETING—Rod McGill will show slides of his Mexican trip.....8 P.M.

Oct. 16—Probable opening of Visitors Building.....9 A.M.

SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

NOVEMBER, 1960

OPUNTIA FULGIDA
FORMA MONSTROSA
BOXING GLOVE CACTUS

REG MANNING

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Bookstore ... June T. Hendrix
Student Horticulturist ... Demitrios Vlachos
Student Horticulturist ... Robert J. Rousseau

Dr. James A. McCleary has requested that we remove him from our staff as Consulting Botanist as he now is Professor of Botany at Orange County State College, Fullerton, Calif. 'Mac' did a fine job at Arizona State University and was instrumental in establishing a course 'Cacti & Succulents', the only one in the country, in the college curriculum about 6 years ago. We all wish he and his family continued success in their new community.

GARDEN OPEN DAILY 9 A.M.—5 P.M.
Including Week-ends and Holidays

BELOPERONE CALIFORNICA Benth, 1844 ACANTHACEAE
CHUPAROSA
HUMMINGBIRD BUSH Acanthus Family

John H. Weber, Horticulturist

Beloperone californica shrub, 4½' tall and 8' in diameter. This shrub was 'frozen back' to ground 3 years ago but quickly recovered

DESCRIPTION:

Chuparosa is a small, dense, bushy shrub having spreading branches that are brittle and spindly. Generally it is a rather low shrub but on occasions attains a height of six feet, forming a large clump. The petioled leaves are ovate in shape, being 2 cm. long and 15 mm. broad. These are densely covered with fine hair and the plant becomes deciduous during dry seasons. Flowers are dull red to scarlet and occur in terminal racemes. They are honeysuckle-like, being tubular funnelform and strongly bilabiate. The dehiscent fruit is about 2 cm. long and constricted at the apex. It is stalked and club shaped in appearance. Two seeds occur in each cell.

DISTRIBUTION:

Beloperone is found in southern Arizona, southeastern California, and in the Mexican state of Baja California, Sonora, and Sinaloa. In Arizona it extends from Yuma Co. east and south through Maricopa, Pinal, and Pima Counties. The elevational range extends from near sea level to four thousand feet, Chuparosa grows along watercourses, on rocky slopes, and near desert springs and seeps. It is limited to the intermountain plains and outwash areas at the foot of the mountains. In association with Palo Verde (Cercidium sp.), bursage (Franseria sp.), and Creosote bush (Larrea tridentata); the plant always grows in rocky, gravelly, or sandy soils.

UTILIZATION:

Use of Chuparosa in landscaping a desert garden is most effective when it is planted by itself and given sufficient area for spreading. Under ideal growth, its spatial requirements may be as much as a circle fifteen feet in diameter. It can be planted at the center

Scandent branch of Beloperone californica showing leaves and terminal blossoms.

of a large blank wall space or adjacent to open fences where it can extend to both sides. Hummingbirds regularly visit this plant for nectar and it can be planted to encourage them to frequent the locale.

CULTURE:

Full sun or partial shade will fill the exposure requirements. When grown in dense shade the plant becomes too spindly and etoliated. It needs a well drained soil of sandy or gravelly texture. While Chuparosa is capable of withstanding considerable drought, it thrives best with frequent watering during dry seasons. Mulching with manure during hot summer months reduces soil moisture loss and gives light fertilization.

PROPAGATION:

Chuparosa can be propagated by seed or by layering from established plants. Seed germination is excellent, with no pre-treatment being necessary. To obtain seed, the fully mature fruit should be collected and be placed in a container. This action prevents loss of seed upon dehiscence of the fruit.

Scarlet, honeysuckle-like, 2" long blossoms of Beloperone californica

AVAILABILITY:

Beloperone californica may be available in some southwestern nurseries specializing in desert plants, but its distribution in the trade is limited if it exists at all.

REMARKS:

Chuparosa attracts hummingbirds and will be of interest to many persons for this reason alone. Palatability is good, but because of a lack of abundance it has limited forage value.

REFERENCES:

Bailey, L. H. — Standard Cyclopedia of Horticulture.

Benson and Darrow—Trees and Shrubs of the Southwestern Deserts.

Dayton, W. A. — Important Western Browse Plants.

Gentry, H. S.—Rio Mayo Plants.

Goldman, E. A.—Biological Investigations in Mexico.

Kearney and Peebles—Arizona Flora.

Shreve Forrest—Vegetation of the Sonoran Desert.

UNUSUAL BLOSSOMS

STETSCONIA CORYNE Salm-Dyck. This plant was given to the Garden by Mrs. Neff K. Bakkers, San Diego in 1938. It has grown into a robust plant 6' tall. It is a native of northwest Argentina and very seldom blooms in this country.

AZUREOCEREUS NOBILIS Akers & Johnson. Mr. Harry Johnson, Paramount, Calif., collected seed of this plant in Peru and gave us one of the seedlings in 1950. The 14" seedling is now 10'-6" tall and bearing many buds, which we understand, will be the first time the plant has blossomed in this country.

PLANT OF THE MONTH

Pincushion Cactus

CORYPANTHA VIVIPARA VAR. ARIZONICA (Spingy pincushion). A solitary to clustering plant that blossoms in June & July and is found growing amongst Junipers and Pines thru Arizona, New Mexico, Southern Utah, and Colorado

HEDIONDILLA
GOBERNADORA
CREOSOTE BUSH
CALTROP FAMILY

Covillea glutinosa Engel
Larrea tridentdata Engel

Zygophyllaceae

LARREA TRIDENDATA, Creosote Bush. Mistaken as "Greasewood," will grow up to 8' tall.

The creosote bush is a most prudent plant — it practices birth control. It sows the ground about its base with a poison on the seeds which retards their development. And when the poison wears off, most seeds are prevented from germinating by a similar poison carried in the falling leaves. Perhaps this is the creosote bush's method of keeping down the population, especially near its own roots, in a land where there is not sufficient water for closely-associated plant colonies.

The separate bushes grow at a respectful distance from one another, and spread the most arid wastes and the alluvial fans of canyon washes with their warm olive evergreen foliage. At times they fill the surrounding air with a pungent salty aroma, which has given rise to its English name of creosote bush, and its Spanish name of **hediondilla**, "the little bad smeller". It is sometimes called **gobernadora, "the** governess", perhaps because of its supposed regulating effect upon rheumatism, kidney trouble, sores, and wounds.

The people of Tularosa rub the dry and ground leaves upon rheumatic limbs, or boil the leaves in water and bath with the decoction. They also sprinkle the inside of shoes with the powdered leaves to guard against rheumatism in the feet.

The remedy against kidney trouble is a decoction of the dry or green leaves, taken with a little sugar.

The leaf nodes of creosote bush are swollen into small warty prominences which are especially resinous, and which doubtless are responsible for the universal belief among both the White and Red inhabitants of the desert that the leaves and twigs, steeped in boiling

Branch of LARREA TRIDENTATA showing flower buds, flowers and the resin covered leaves

water and applied to bruises and wounds as a poultice, are especially effective.

An additional characteristic possessed by this bush is that it exudes a thick gummy substance, equal in nearly all respects to the commercial East Indian shellac. This is the result of the work of a scale insect, included in the genus **Coccus**, which punctures the young twigs, lays its eggs in them, and at the same time causes them to exude gum. Mary Austin and Dr. Edward Palmer say that the Indians used this as a cement to mend broken pottern, make the grass baskets watertight, and affix arrow heads.

Carl Lumholtz, in his valuable book, "New Trails in Mexico", while describ-

Typical LARREA TRINDENTATA (Sonoran) desert. The plants grow close together in shallow washes but are sparse in the level areas.

ing his experiences near the two cone-shaped peaks, Los Picos del Pinacate, recorded this charming tale of Papagoan mythology: "The locality is famous in the legends of the Papago as being the mountain where Iitoi, or Elder Brother, landed after the deluge. He knew, so tradition goes, that the world was going to be flooded, and he saved himself in a cask made from greasewood 'gum' with a cover of the same material. He also taught the coyote how to save himself in a reed. He advised the **pinacate** to go down into the ground, and the vulture to rise high up in the sky. Elder Brother saw how water came forth from the tops of mountains, and when it was rising he entered his cask which floated four times around the world, and then he landed at Pinacate and was very thin after the long voyage".

Other Indian tribes have found the creosote bush valuable for the Yavapai at McDowell, Arizona, steam lying-in women four days after childbirth with the leaves and twigs, and drink a decoction of the leaves as a remedy against internal chill.

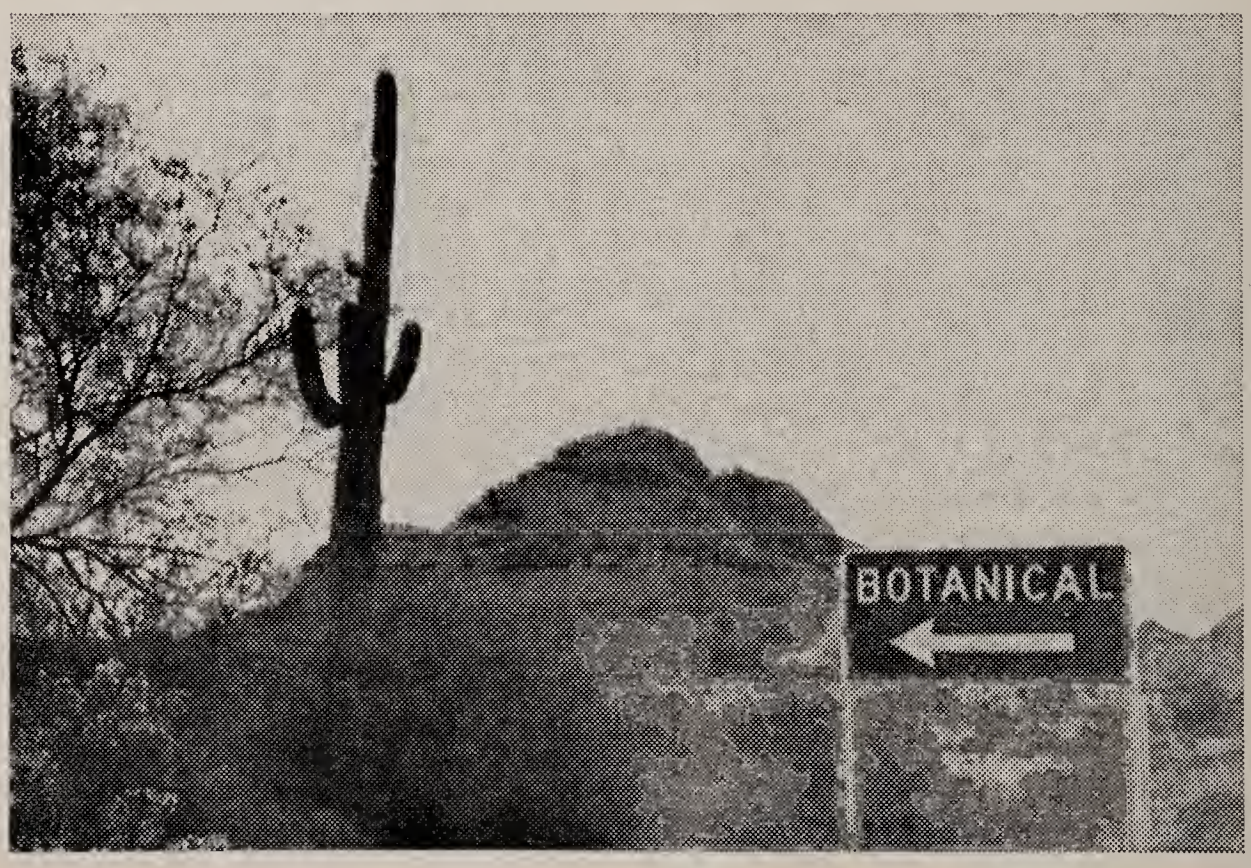
The Pima Indians chewed and swallowed the gum as an anti-dysenteric; the Maricopa took a weak decoction of its bark for intestinal troubles; and the Apache used its tops as a poultice for rheumatism.

Ethnobotanical excerpt from 'Healing Herbs of the Upper Rio Grande' — L.S.M. Curtin, Laboratory of Anthropology, Santa Fe, N.M.

HIGHWAY SIGNS

The Arizona Highway Dept. has erected 2 approach signs on each side of Van Buren St. (Hwys. 60, 70, 80, & 89) indicating turn-off to the Garden. This is a view thru Papago Park.

The Maricopa County Highway Dept. has also erected 2 approach, reflector type signs this year on E. McDowell indicating north entrance to Garden



Reflector sign at McDowell St. entrance to Garden. In the background can be seen Barnes Butte, one of the Garden's landmarks.

Gardeners' Q And A

Q. SHOULD cactus be watered at planting time, and afterward?

A. NO. True cacti such as saguro, barrel and prickly pear store their own moisture. Most loss of cacti is due to overwatering. Plants should have a short hardening-off period, with roots exposed; then dust base with fungicide before transplanting. Although roots may die in transplanting, cactus will put out new roots. Natural rainfall here provides sufficient moisture for native cacti.

Q. SHOULD cacti be planted in areas that are irrigated?

A. NOT unless the cactus bed is mounded up to place plant roots above irrigation level, for reasons explained above.

Q. WHAT desert plants should be watered and when?

A. OCOTILLO, yucca, agave, and all desert trees and shrubs should be watered at planting time, and regularly but not too frequently, during the first year they are getting established. A wide shallow 'water ring' depression around desert trees helps let rain water in; hold moisture at roots. Do not overwater.

Q. WHICH desert trees and shrubs are best for bloom?

A. NEARLY all will bloom, but the native blue palo verde, one of the first to flower in the spring, is literally covered with yellow bloom. Sweet acacia is nice for fragrance. The ocotillo's flame-red spikes of bloom are striking, and the yucca's tall stalk of creamy blossoms is beautiful. Desert exotics from other dry climates that bloom effectively are cassia, desert bird of paradise, Trinidad flame bush and Texas sage.

Q. I HAVE been told a 12' high saguaro, without arms, may cost $100, and one with arms more. Why are they so costly?

A. THE saguaro grows very slowly, taking many years to reach this height. This heavy, rigid cactus is quite difficult to handle. After desert rains the saguaro is succulent, very heavy and brittle, so that arms break off easily. Cactus may not be removed from the desert without a permit from the owner of the land and the State Entomology Dept.

Q. FOR a picturesque accent in a desert planting, which would be the better choice, joshua or yucca?

A. JOSHUA does not do well here. The yucca elata, native to our part of the desert, makes a striking specimen when larger plants are used.

The above excerpt was taken from the Arizona Republic, Garden Section, Nov. 9th, 1960. The local newspapers are now carrying more information for the many persons interested in the growing of desert plants.

CALENDAR OF EVENTS

NOVEMBER

1st	8 P.M.	Meeting — CACTOMANIACS Club.
3rd	3 P.M.	Lecture—Phoenix is Worth Knowing—Mr. H. Ridner
9th	3 P.M.	Class — Deserts how formed and their plants.
10th	3 P.M.	Lecture — Arizona Wildflowers in Bloom.
16th	3 P.M.	Class — Desert Plants & Their Culture.
17th	3 P.M.	Lecture — Arizona Trees & Shrubs in bloom.
23rd	3 P.M.	Class — Desert Succulent Plants.
24th	3 P.M.	Lecture — Arizona Birds, Animals & Reptiles.
30th	3 P.M.	Class — Identification of Desert Plants.

DECEMBER

1st	3 P.M.	Lecture — Succulents other than Cacti.
6th	8 P.M.	Meeting — Cactomaniacs Club.
7th	3 P.M.	Class — Desert Survival Plants.
18th	3 P.M.	Lecture — Collecting Plants in Mexico.
14th	9:30 A.M.	Class — All-day desert field trip.
15th	3 P.M.	Lecture — Arizona Cacti in Bloom.
22nd	3 P.M.	Lecture — Arizona Wildflowers in Bloom.
23rd	3 P.M.	Lecture — Arizona Cacti in Bloom.

LECTURES are illustrated and last **½ an hour**
CLASSES last one hour.

SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

DECEMBER, 1960

Aerial view of Garden looking south from McDowell Rd. entrance. Nov. 1960. See p.112 for an over-all aerial view.

REG MANNING

SAGUAROLAND BULLETIN

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W. HUBERT EARLE, Editor

Volume 14 December, 1960 No. 10

Arizona Cactus and Native Flora Society

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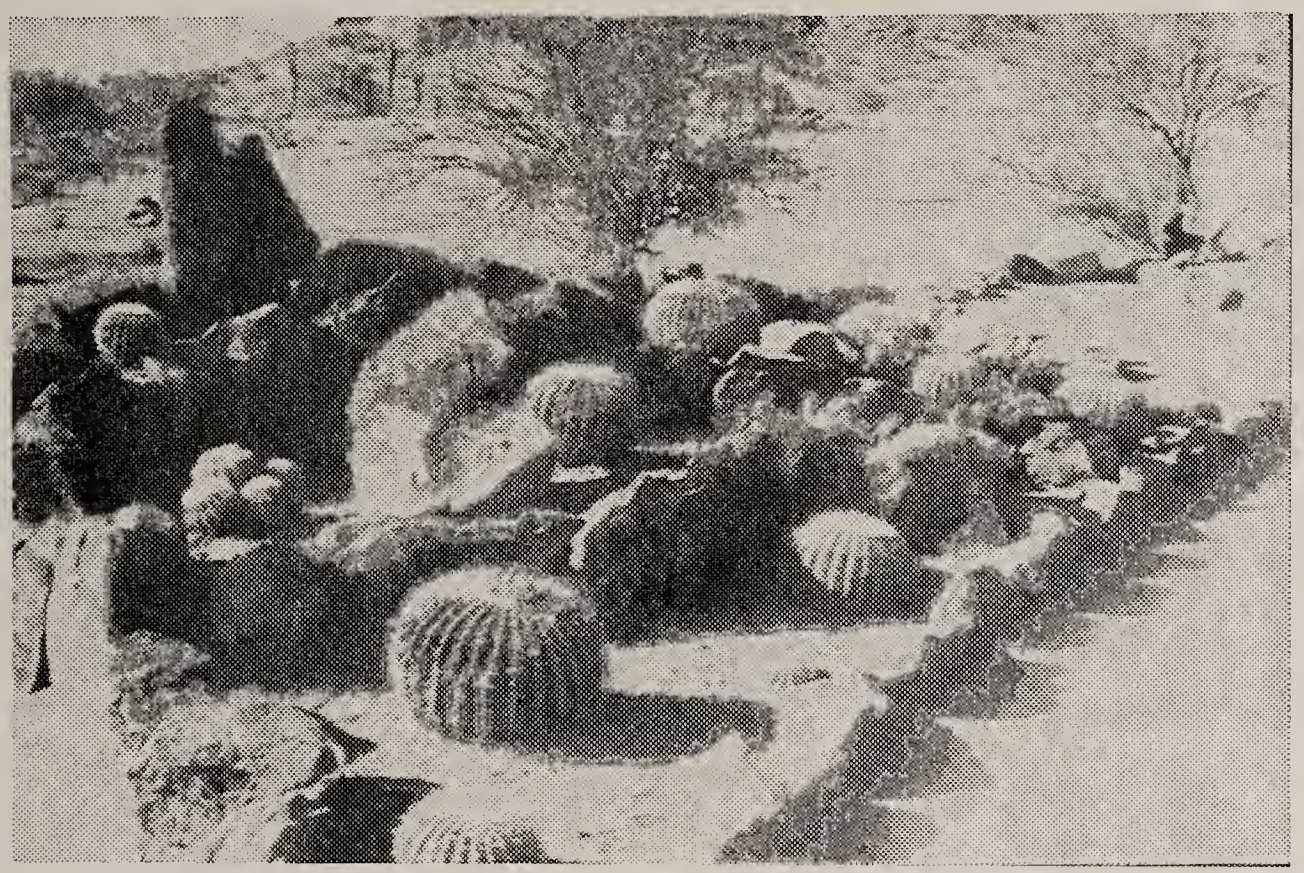
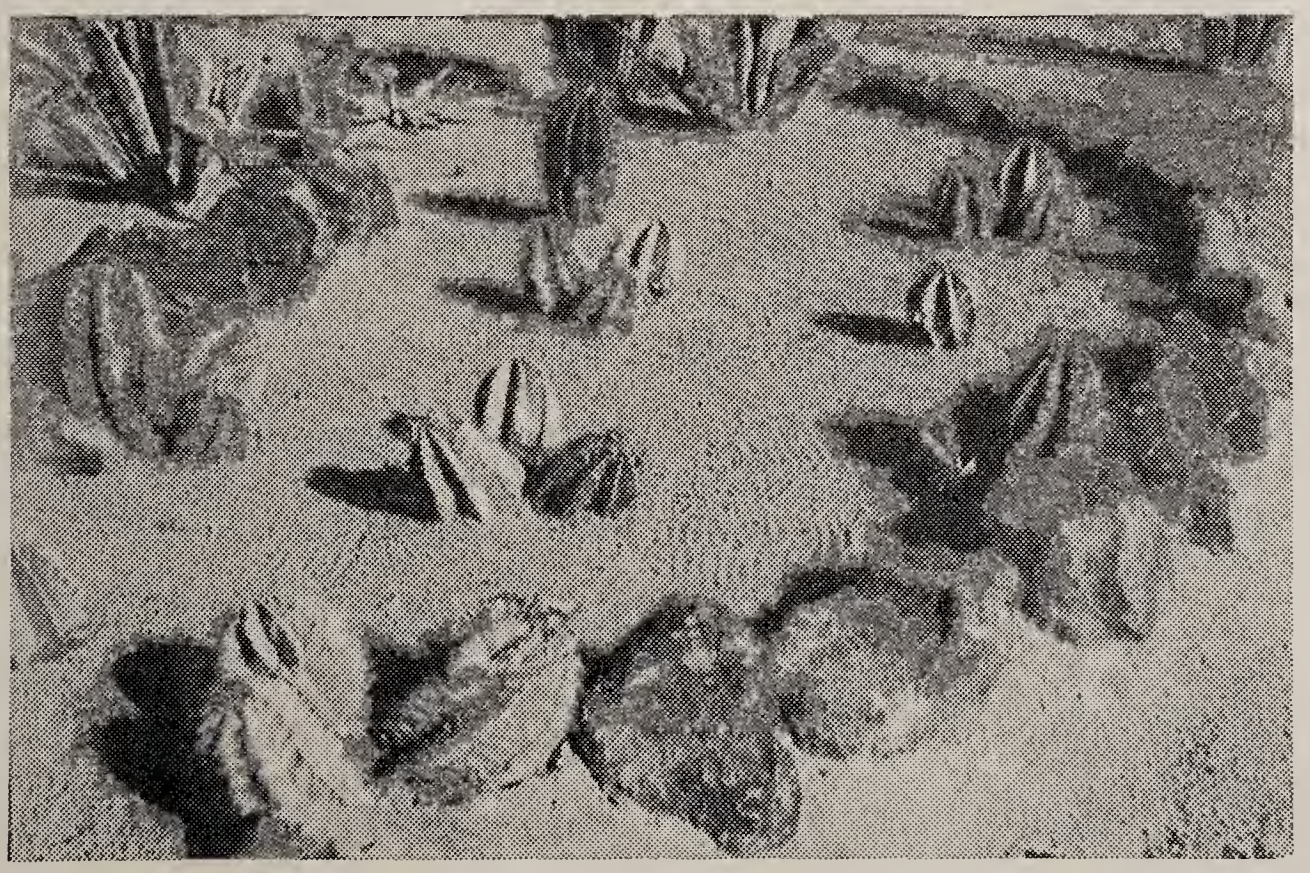
TO ALL OF THE MEMBERS OF THE GARDEN
FROM THE: — OFFICIAL BOARD, ADVISORY BOARD AND GARDEN STAFF



An eye-catching new bed of Golden Barrels (Echinocactus grusonii) planted amongst black volcanic rock in front of new visitors Reception Bldg.



A new bed of large Star Cactus (Astrophytum ornatum) The plants in these photos were given to the Garden by the estate of the late Miss Helen Brinton

RHAMNUS CROCEA

RHAMNACEAE
(Buckthorn Family)

HOLLYLEAF BUCKTHORN

John Weber — Horticulturist

Rhamnus crocea shrub 6' tall and 5' wide found growing in the New River Mts., Ariz.

DESCRIPTION:

An evergreen shrub or small tree with stout, spreading, scarcely spinescent branches. Rising from a distinct trunk, Buckthorn attains a height ranging from three to twelve feet. The clean attractive foliage consists of round or oval shaped leaves one and a half inches in diameter. Hollylike in form, these leaves are dark green above with a mellow gold color below. Leaf margins are dentate with spiny teeth and are rounded at the apex and base. Small inconspicuous greenish flowers are borne from March through the summer months. The flowers are without petals and the individual sexes are found on separate plants. Bright red ovoid berries adorne the plant in late summer and early fall. This fruit is a juicy drupe one quarter of an inch long and occurs in clusters along the sides or at the tips of the branches. Contained within the berry are two nut-like seeds.

DISTRIBUTION:

Hollyleaf buckthorn is common on slopes, foothills, mountains, and open desert ranges. It grows on all exposures at elevations ranging from 3,000 to 7,000 feet and on decomposed granite or rocky well drained soils. Plants in common association with RHAMNUS are CERCOCARPUS SP. (Mountain Mahogany), CEANOTHUS (Buckbrush), BERBERIS SP. (Barberry), and RHUS OVATA (Mountain Laurel).

Distribution ranges from California to northern Baja California and into Arizona. In California it is found in the coastal region of southern California, on the middle and inner coast ranges, and in the Sierra Nevada foothills. Found in Arizona below the Mogollon rim from southern Coconino and Yavapai counties south and east to Maricopa, Gila, Greenlee, and Cochise counties. Buckthorn is an important component in the floristic composition of the central Arizona chaparral.

UTILIZATION:

RHAMNUS may never become a common element in desert landscaping due to a slow rate of growth. Drought and cold resistance, compact form, color contrast, and ornamental fruit render it worthy of consideration. Withstanding shearing and pruning well, Buckthorn is suitable for foundation planting and hedging. It is in best form when used individually as a specimen plant where a large ornamental shrub is desired.

A 3' branch of Rhamnus crocea

CULTURE:

Buckthorn is not exacting in exposure requirements, full sun or partial shade being suitable. A rocky or well drained soil is essential as excessive water during summer months can be deleterious. Light feeding with a nitrogen fertilizer in early spring will aid in keeping good growth form and color.

PROPAGATION:

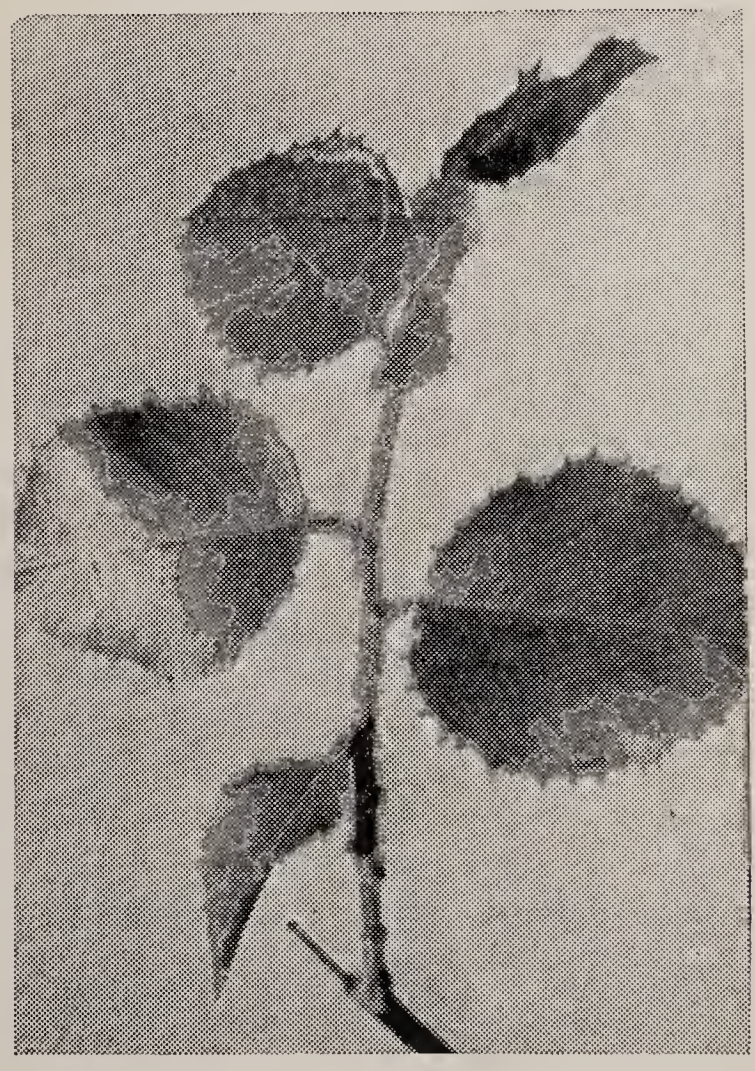
Seed of RHAMNUS apparently retains its viability for only two or three years. If seed is fresh it may be planted without pretreatment. When the seed is old, sixty days stratification at 40° F. will aid germination. When field grown the seed should be installed eight inches apart and one half inch deep in moist soil under partial shade. Buckthorn can also be propagated by layering and cuttings. By any method growth rate is slow and immediate results are not to be expected.

AVAILABILITY:

Several species of RHAMNUS are listed by wholesale growers in California. Local nurserymen may be able to obtain these on request.

REMARKS:

Buckthorn is browsed extensively by deer and on some ranges by Bighorn sheep. In one group of deer studied, more than half of the animals utilized buckthorn for forage. This study also demonstrated that it made up more than ten per cent of the volume of forage intake. Analysis showed a high moisture, protein, and phosphorus content. Birds and small mammals also utilize the juicy berries in season.



Holly-like leaves of Rhamnus crocea. XI¼

PLANT OF THE MONTH

Peniocereus greggii (Arizona Queen of the Night) A plant of dry appearing stems that produce beautiful white blossoms with an exotic odor during June and July. This unusual plant stores its moisture in a large underground turnip-like tuber, sometimes weighing up to 65 pounds. the plants are found in California, Arizona, New Mexico, Western Texas, also Sonora, Chihuahua and Zacatecas, Mexico

Aerial view showing a portion of the Garden, April 1960 Photo courtesy of the Arizona Photographic Associates. A photo showing 1960 improvements will be published in 1961.

MAIZ
CORN
GRASS FAMILY

Zea mays L.
Gramineae

Corn and Indians long have been closely-correlated words because they have been consistently associated since the discovery of the New World; and so familiar and characteristic a North American plant needs no introduction to recommend it to the interest of those who read this book.

Scientists believe that corn is autochthonous in the Americas, and among the botanists it is known that a coarse native grass of our Southern States — teosint or teocentle—can be specialized, as proven by Luther Burbank, in sixteen generations, to produce a kind of **maiz**; but there are recognized indications that the grain may have developed in one of the plateau regions far to the south. It is supposed that this development took place through some twenty thousand years, and it is known that all the varieties now in use, such as dent, round- and pointed-grained, and pop corn, were developed before the White man appeared in the New World. And no particularly improved methods of raising it have been added since.

Indians have their own explanations to account for its origin and also for its variously colored strains. The following myth of Zuni is only one of many legends on the same subject: Their ancestors selected large and beautifully colored grass seeds, to the number of seven different kinds of seven different shades, these being the yellow, blue, red, white, streaked, black and all-colored; and ceremonially planted one of each with feathered wands of corresponding hues, the yellow, blue white and red they planted according to the four world regions, the cardinal points of the compass, but being puzzled about where they should place the other three, they glanced at the sky, for it was night, and saw there the seven great stars. With gladness and rejoicing, they planted the remainder according to the position of the other three stars outside the heavenly square. They were then fertilized by the ritual union of the youth Ya potuluha with the Seven Corn Maidens, beautiful as the seven stars, and the different kinds of corn sprang up according to the colors of the former grass seeds, and thus we have the various corns.

The Rio Grande Tewa plant corn in April. As with all other seeds, "it should be sown under a waxing moon, so as to grow with moon; under a waning moon the seeds cease growing". It is gathered in late September or early October, after the watermelons have been harvested. "The **gobernador** proclaims the day on which people are to take their corn, and at the more conservative pueblos, for instance at Nambe, no one dares to take it before the time." At the time of husking, the best ears are saved for seed, but not all of them are planted the following yera, but are kept two winters, for if the first planting should fail, then they would have no seed. A few husks are left on the seed corn, and they are woven together with **ristras**, much like the **chile**, and hung over the parapet of the roof to dry before winter storage.

There is a story that in ancient times women did not have to grind; they simply laid the **mano** and the corn on the **metate** and it ground itself. However, in these parlous days, nothing like that has been known, and the women are forced to pulverize the kernels. Several women grind together at night; on four **metates** ranging from rough to fine. On the first they break up the kernels and on the fourth finally reduce them to a fine powder. Meanwhile the men sing the grinding song or beat upon a drum, and the women keep time with their **manos** in slow regular strokes.

Corn meal has many ritual uses, and a bowl of it is kept in a niche by the

The deliberate perpetuation of colors and combinations has been an Indian custom for centuries.

Left to right White on black, Black and blue on rose-pink, Blood-red, Purple on pink, Purple, Black and white, Vari-color on white
The American Indian and his colored maize are inseparable.

From Sag. Bulletin, Feb. 1952 R. C. Proctor photo

door of every house to be sprinkled much in the manner of holy water; white corn meal primarily is a woman's offering, as feathers are the offering of the men. When the impersonators of the katchina visit a house, the women welcome them by throwing corn meal to each in turn. At public dances in the Tewa plazas, several old men pass along the line of dancers, throwing meal to each and uttering requests on behalf of the village. The clowns in the dances also wear meal-bags at times and occasionally sprinkle from them. Upon the naming of a child, the face, breast, and hands are powdered with born meal, and the walls of the room should be "painted" with meal in four places. Great care is taken by the Zuni as well as by many other Indian peoples to obtain corn in a variety of colors for ceremonial purposes. They must have the four colors of the cardinal points, as well as black for the nadir and all colors for the zenith.

Naturally, corn is one of the most important of Indian foods, and is made into wafer bread, the **guallabe** of the New Mexican Spanish, the **piki** of the Hopi, the **hewe** of the Zuni, and the **mowa** of the Rio Grande Tewa; and into **atole**, a kind of gruel, and **posole**,

A—Maize tassel: The terminal, or central, spike is cylindrical, with eight or more rows of spikelets. This many rowed central spike is not found among any of the relatives of maize.

B—Whereas the central spike in the tassel of Euchlaena, and Tripsacum, is merely one of the numerous branches.

The tassel is the male inforescence of both Euchlaena and maize, or Indian corn.

(Drawing by Sharon Proctor, after Smith.)

From Sag. Bulletin Feb. 1952

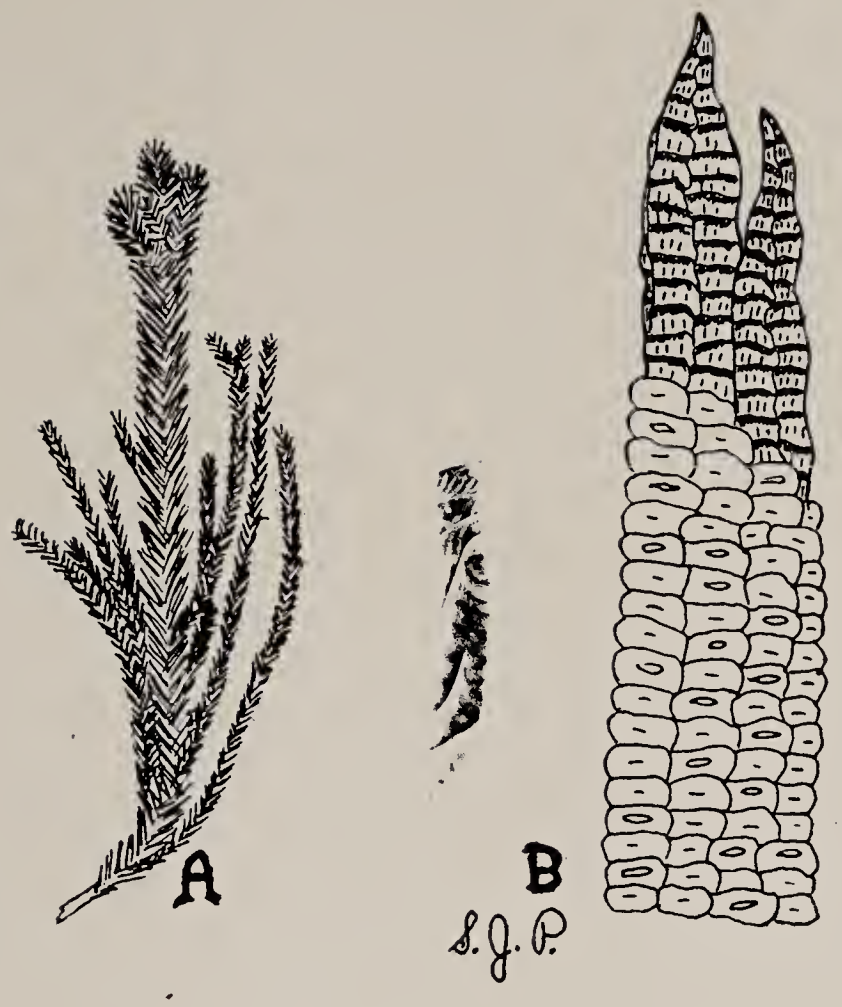
a form of hominy. Cooked foods are appropriate gifts and corn in various forms frequently is given to one's neighbor. But however charmingly presented, it is understood that the "gift" will be returned in some other form by the recipient. At different times varying amounts of corn were traded for Buffalo hides. At Santa Clara pueblo, corn served as a tally in the election of the governor.

Any substance which is as important as corn from a nutritive and ceremonial point of view, necessarily carried with it some medicinal utility. At San Ildefonso pueblo, corn pollen especially was recommended for palpitation of the heart, and with what seems due regard for the "Doctrine of Signatures", black corn with a slight streaking of red is good for women at their menstrual periods. The Commanche, Kiowa, Blackfeet, Crow, Sioux, and Arapahoe Indians all took the ground meal steeped in lye as an intestinal antispasmodic.

The Maya in their medicinal texts prescribe raw **maiz** soaked in water for blood in the urine; the grain also was roasted and crushed with the **macal-kuch** (Discorea spiculiflora, Hemsl.) to poultice a sore or swelling caused by sorcery.

Curiously enough, I have learned that the dry **espigas de maiz** are considered very effective against witches by the Spanish New Mexicans. They say that this is because the stems of these flower spikes appear to form a cross. In order to cure a sick person suffering from bewitchment, the **espigas** are burnt with a match, a little water is added to the ashes and the patient drinks the substance. But another method to ease the external pain caused by witchery is to light the **espiga de maiz** over a plate, collect the ashes and rub them on the place where the pain is centered.

The Spanish New Mexicans also have developed treatments for many ills through the use of corn in various forms. They make a mush from the blue meal (chaqueque), and apply it hourly to bullet wounds until they are healed. The **cabello de maiz** (corn silk) **is** bolied in water, and taken, with the addition of **piloncillo** (Mexican brown sugar), three times a day as a diuretic. The dry corn is employed as a diaphoretic for pneumonia. It is crushed and sprinkled over a pan of hot coals.



Fasciation, or the growing together of two four-rowed branches of the tassel; and hence the ear — a theory.

A—A maize tassel showing the growing together of two four-rowed branches into a central spike; and the fusion of the lateral branches; suggesting the origin of the ear by fasciation.

B—Fasciated ear showing division of two four-rowed segments at the top and eight rows (one side view) of seeds at bottom.

From Sag. Bulletin March 1952 (Drawing by Sharon Proctor)

The patient is placed on his back with knees up, and without clothes. The pan of coals and corn is placed under the knees and a sheet and blanket complete the covering of the afflicted person. The hot pan must be renewed three times and the patient must be allowed to sweat for three hours. Then a purge is administered of two teaspoons of "saltrastica" in a cup of senna tea.

For those afflicted with asthma, a teaspoon of the **flor de maiz** (corn flower) is boiled in a cup of water and drunk three times a day. A blind woman at Pena Blanca, whose mother was a famous **medica**, gave the following confirmation of its virtues: "My husband suffered from a bad cough for two years and he consulted many doctors but they were unable to help him. Finally, he took this very good remedy and he was soon cured".

Though I have discussed the wide and varied utility of corn in New Mexico, significantly enough, our "Historie of Plantes", published in London in 1578, has very little to say of its virtues. "This grayne groweth in Turkie wher as it is used in the tyme of dearth", it states, and that "there is as yet no experience of the natural virtues of this corne".

Ethnobotanical excerpt from 'Healing Herbs of the Upper Rio Grande'—L. S. M. Curtin, Laboratory of Anthropology, Santa Fe, N. M.

Courtesy of the 'Cactus and Succulent Journal' U.S.A.

SCEHDULE OF ACTIVITIES FOR DECEMBER

Dec. 1	—Lecture — Succulents other than Cacti	3 P.M.
Dec. 6	—Cactomaniacs. Christmas meeting	8 P.M.
Dec. 7	—Class—Desert Survival Plants	3 P.M.
Dec. 8	—Lecture—Collecting plants in Mexico	3 P.M.
Dec. 14	—Class—All day desert field trip	9:30 A.M.
Dec. 15	—Lecture—Arizona Cacti in Bloom	3 P.M.
Dec. 22	—Lecture—Arizona Wildflowers in Bloom	3 P.M.
Dec. 29	—Lecture—Arizona Cacti in Bloom	3 P.M.

JANUARY

Jan. 1	—CACTOMANIACS Meeting	8 P.M.
Jan. 4	—Class—Know your Desert Plants	3 P.M.
Jan. 5	—Lecture—Arizona Wildflowers	3 P.M.
Jan. 9	—Executive Board Meeting	6:30 P.M.
Jan. 11	—Class—Culture of Desert Plants	3 P.M.
Jan. 12	—Lecture—Arizona Trees & Shurbs	3 P.M.
Jan. 18	—Class—Desert Succulent Plants	3 P.M.
Jan. 19	—Lecture—Arizona Birds & Reptiles	3 P.M.
Jan. 25	—Class—Desert Trees & Shrubs	3 P.M.
Jan. 26	—Lecture—Succulent Plants in Bloom	3 P.M.

Continued from page 113

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